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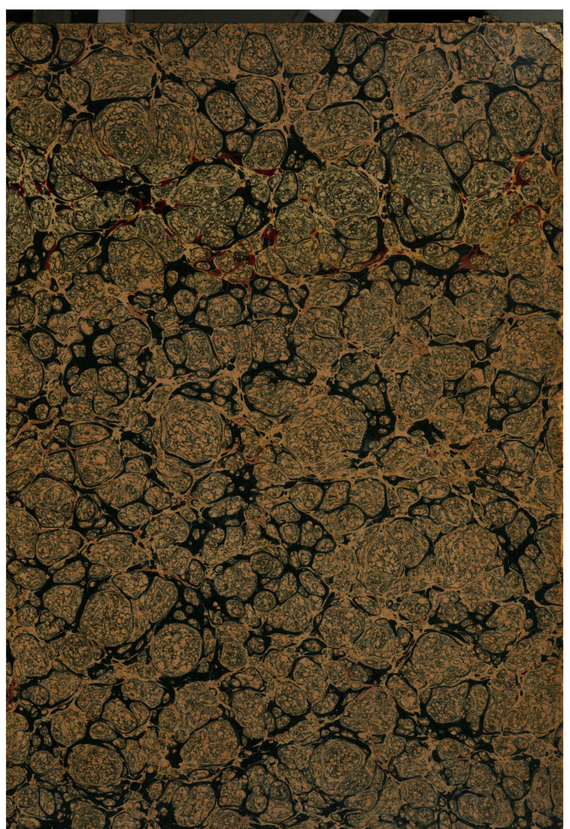
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The Motor World

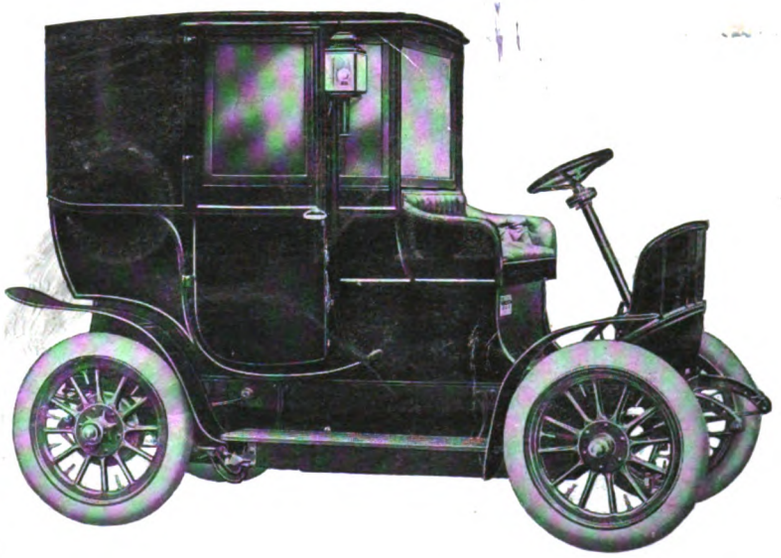
Volume XI
No. 1

New York, N. Y., U. S. A., September 28, 1905.

10 Cents a Copy
$2.00 a Year

Columbia ELECTRIC Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other Improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75.

ELECTRIC VEHICLE COMPANY, Hartford, Conn.

NEW YORK BRANCH: 134, 136, 138 West 39th St.
CHICAGO BRANCH: 1413 Michigan Ave.
BOSTON: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.
PHILADELPHIA: Pennsylvania Electric Vehicle Co., 250 North Broad St.
WASHINGTON: Washington E. V. Transportation Co., 15th St. & Ohio Ave.
PARIS: A. Bianchi, 194 Boulevard Malesherbes.

Member Association of Licensed Automobile Manufacturers.

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The Hartford Perfected Dunlop Tire.

Paris, July 28, '05.

Dear Sirs:-

We have arrived in Paris coming over the Route Nationale from Aix les Bains via Lyons and Nevers. The roads were exceedingly trying, very hard and a lot of "pave" or cobblestones. I had two punctures. These were the only mishaps in 2136 miles and the tires have stood the hard work without showing any other signs of wear and tear. People here consider this a very good record as many of the best foreign tires blow out from the heat.

Yours truly,

Walter Hale

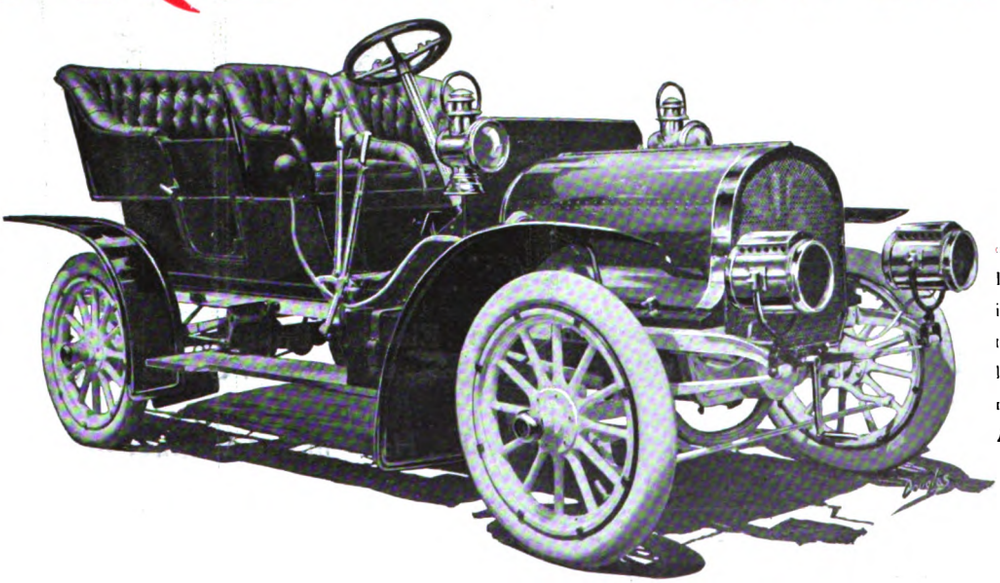
Postal No. 3.

Watch for others to follow.

Made by THE HARTFORD RUBBER WORKS COMPANY, Hartford, Connecticut.

CORBIN CARS

A stock 16 H.P. Model D made 2321.6 miles in the six day, non-stop contest at Long Branch, N. J. Duplicates of this car can be delivered promptly.



The performance of the Corbin 16 H. P. Air cooled motor in the non-stop contest has forever silenced the opponents of **practical Air Cooling.**

THE CORBIN MOTOR VEHICLE CORPORATION, New Britain, Conn.

NEW YORK, 4 West 38th St. BOSTON 163 Columbus Ave. PHILADELPHIA 629 No Broad St.

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What You Get For Your Money

is more important than the price you pay.

That is one reason why our cars are so often referred to as

"Those Remarkable Mitchells"



MITCHELL LIGHT CAR, $750.



MITCHELL TOURING CAR, $1500.

They set up a new standard in price values.

At $750 and $1200 there is nothing that even begins to approach them.

Have you ever taken the trouble to "look into" the matter?

MITCHELL MOTOR CAR COMPANY,

RACINE, WIS.

Member American Motor Car Manufacturers Association, Chicago.

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First 4 of the 5

Qualifying for the

VANDERBILT RACE

equipped with

Diamond

WRAPPED TREAD TIRES

Not one of these tires was touched in any way!

The tire records of *all* cars using Diamonds, (8 of the 10) were the same

NOT A PUNCTURE! **SCARCELY A SCRATCH!**

Diamond was the only make of Tires which gave no trouble.

Like the unequalled performance of Diamond Wrapped Tread Tires in the Gordon-Bennett race it points infallibly to the popular conclusion

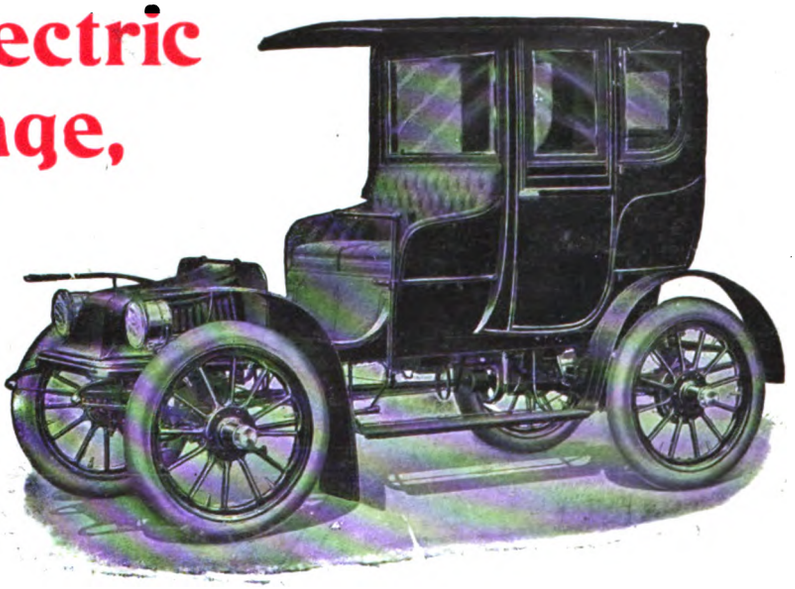
THE WORLD'S BEST CONSTRUCTION! **THE WORLD'S BEST TIRES!**

THE DIAMOND RUBBER COMPANY, - Akron, Ohio

The BAKER ELECTRIC

The Baker Electric Depot Carriage,

The Most Elegant of all Electrics.



ALSO

RUNABOUTS, STANHOPES,

SURREYS, ETC., ETC.

WE ARE READY TO TALK BUSINESS.

THE BAKER MOTOR VEHICLE COMPANY, CLEVELAND, OHIO.

C. B. RICE, Broadway and 58th Street, New York Agents.

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A Frank Talk With Auto Owners?

Every automobilist has a right to be a crank about his tires.

There is no more reason why he should accept any make of tire than that he should buy the first car he sees.

The price of a whistle always carries with it the privilege of selecting your whistle.

Ditto auto tires.

You know and we know that tires have a heap to do with making any automobile as serviceable as it should be.

Put indifferent tires on the best car made and the chances are that farmers will tow you farther than your motors will propel you, and that the repair man will be as much in demand as your chauffeur.

Good tires are the real secret back of most of the successful trips you have made.

A really good tire is not only an economy in itself but does more to neutralize the wear on other parts of the machine than is generally supposed.

Take care in selecting your tires and your tires will help you take care of your car.

Morgan & Wright tires are good tires for the automobilist, because they give an exceptional amount of sustained service.

As one user puts it: "They don't chum much with the repair shop."

They are long-lived, ultra-serviceable tires, and are known to be such by those who use them.

(Be a crank.) Insist upon Morgan & Wright tires.

MORGAN & WRIGHT, Chicago.

PHILADELPHIA—Cor. Broad and Vine Sts.
BOSTON—228 Columbus Ave.
CLEVELAND—347 Huron St.
DAYTON—417 E. 5th St.
DETROIT—265 Jefferson Ave.
NEW YORK—214 W. 47th St.
SYRACUSE—212-214 S. Clinton St.
MINNEAPOLIS—708 Hennepin Ave.
ATLANTA—35 Edgewood Ave.
SAN FRANCISCO—1067 Mission St.
DENVER—1562 Broadway.
ST. LOUIS—538 Vandeventer Ave.
LOS ANGELES—940 S. Main St.

Satisfaction and the OLDSMOBILE

We have been telling you why the Oldsmobile is always safe under all circumstances and for any member of your family.

The same features have to do with the complete satisfaction every Oldsmobile owner gets from his machine—which having been bought in the first place at a reasonable price, is found to be economical to maintain and thoroughly dependable in every part. Let us repeat the features:

Two Brakes.
Large Parts.
Strong Springs.
Heavy Spindles and Wheels.
Analyzed Material.
Severe Construction Tests.
Unbreakable Steering Connections.
Simple Operation.

We want especially to emphasize simplicity of operation. There are more ladies driving the Oldsmobile in this country than any other make of automobile. The clutches are easily handled. The control is free from complication, and the brakes are strongly connected and easily operated. If you will write us we will gladly set before you more of the convincing reasons as to the desirablity of these cars. If your will call on our nearest sales agent, you can arrange for a demonstration. Send for Catalogue 53.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

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A Few Words to the Automobile Agent

¶ If your Agency arrangements during the past year have been satisfactory, do not make any change.

¶ We don't believe in changing Agencies unless there is a good reason. Naturally, we desire to get in touch with the best men in the business as we want the strongest sales organization we can get for the WAYNE cars.

¶ There are two ways for a manufacturer to obtain his Agents. One is to have a high-priced sales manager—an entertaining gentleman of fine address who can go out and make contracts irrespective of the actual merits of the car. The other method is the "show me" method, where the manufacturer gets down to "brass tacks" and makes his Agency arrangements based upon the actual merits of his car and by giving the Agent a fair and square deal all around. The Wayne cars have won a foremost place among American Automobiles by actual merit, and the Wayne Automobile Company has made rapid strides to the front.

¶ Last year we spent upwards of **$50,000** in judiciously advertising our Cars. This year we are going to do even more advertising and the Agent who takes the Wayne car now is going to get the benefit from this publicity and is going to get the hearty co-operation of the factory as well.

¶ We have perfected arrangements for early and prompt delivery of our **1906** models because we want to be in a position to carry out the "show me" policy and to live up to our Agency arrangements.

¶ We have the cars, gentlemen, we have the facilities for manufacturing and for making deliveries, and we are going to do our full share in thoroughly advertising the Wayne cars. Now, we want to get our **1906** Agency arrangements closed and then we are all in shape to make money. Will you write us about the Wayne representation in your territory today?

WAYNE AUTOMOBILE CO., Dept. Q, DETROIT, MICH.

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DON'T EXPERIMENT
Just Sell
THE FORD

Mr. Agent:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the agent who sells a car not up to standard loses both *prestige* and *reputation*.

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown.*

You know the general rush to the Ford exhibit at the shows, and how they all ask, *"What has Ford this year?"* plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before, except that there is certainly good business ahead for the Ford agent in 1906, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR COMPANY, - - - Detroit, Mich.

MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO.

Canadian Trade supplied by THE FORD MOTOR CO., of Canada, Ltd., Walkerville, Ont.

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

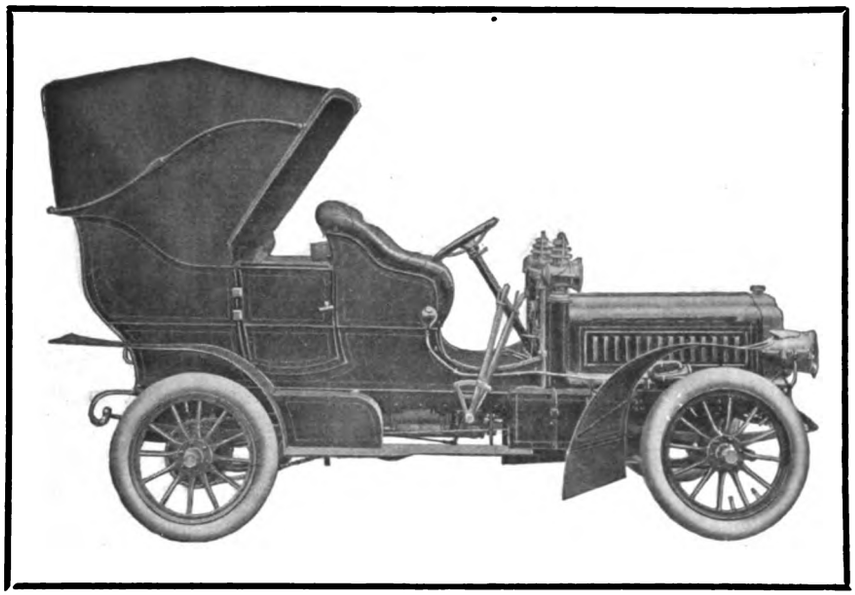
MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative:
A. F. CHASE.

Members of American Motor Car Manufacturers' Association.
Agents in principal cities.

New York Agents:
MAXWELL-BRISCOE, INC.

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TANNER & COMPANY,

AUTOMOBILES, MOTOR CYCLES, BICYCLES AND SEWING MACHINES.

NEW BEDFORD, MASS., September 2, 1905.

E. R. THOMAS MOTOR CO.,
Buffalo, N. Y.

Gentlemen:—Last October I purchased a 24 horse power Thomas Flyer from a Boston owner, who told me that it had been driven 10,000 miles during 1904. Since owning this car I have covered 21,000 miles in it personally, getting over $1700.00 from renting the same, and the machine seems smoother running to-day than ever.

I have carried six and seven people in it many times on trips forty and fifty miles. Better service could not be asked or given.

Yours very truly,
WM. E. TANNER.

COMMONWEALTH OF MASS.
New Bedford.
Bristol, ss.

{ L. S. }

Personally appeared the said Wm. E. Tanner and made oath that the above statement is true. Sworn to before me this second day of September, 1905.

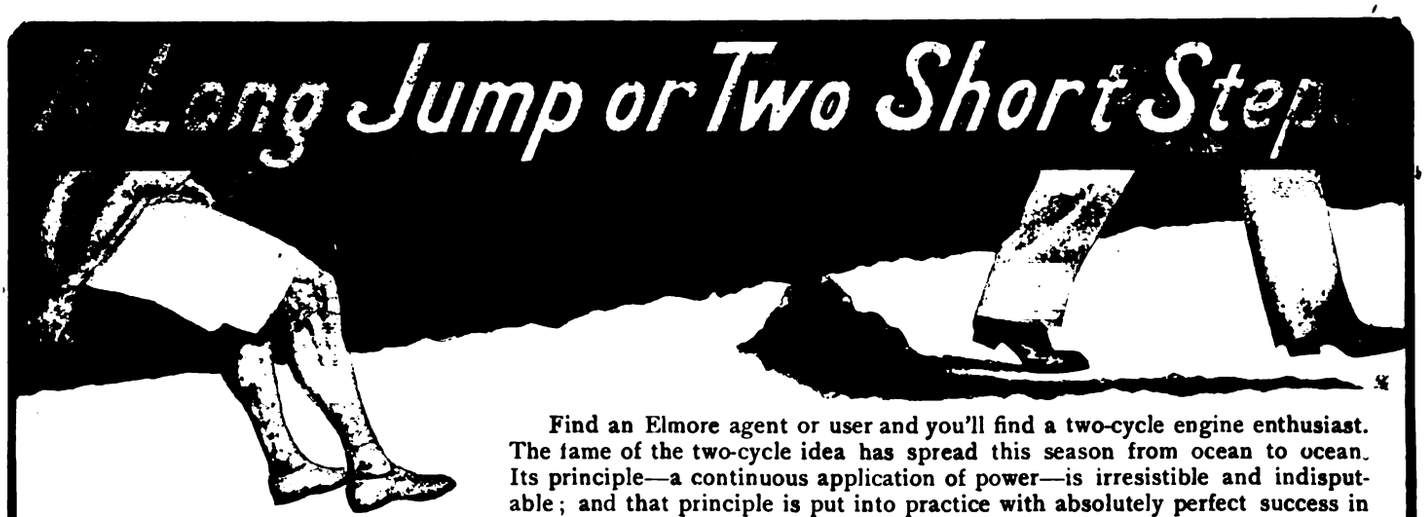
CHARLES T. HERON,
Justice of the Peace.

E. R. THOMAS MOTOR COMPANY,

Makers of Thomas "Flyer" Automobile.

1210 NIAGARA STREET, - BUFFALO, N. Y.

Members A. L. A. M.



Find an Elmore agent or user and you'll find a two-cycle engine enthusiast. The fame of the two-cycle idea has spread this season from ocean to ocean. Its principle—a continuous application of power—is irresistible and indisputable; and that principle is put into practice with absolutely perfect success in

THE TWO-CYCLE ELMORE

Pictnre to yourself two men—one trying to cover the ground in long, hard jumps, the other forging ahead in quick, short steps. The first is the four-cycle—and bound to lose against the two-cycle with its even steady gait. We have a book called "A Long Jump or Two Short Steps," which explains this in A B C style.



Better still, we have a record of victories in every test worthy of the name. Better still, we have the every-day testimony of thousands of users to which you can easily refer.

The Elmore two-cycle engine is no longer the "coming" engine—it is here. You'd better join the army of enthusiastic converts. Ask your agent or write to us.

THE ELMORE MFG. COMPANY, 2304 Amanda Street, CLYDE, OHIO

Representatives: A. E. RANNEY & CO., New York; GAWTHROP & WISTER, Philadelphia; SENECA AUTO. CO., Rochester; YOUNG & MILLER, Detroit; HEIN & CASPER, Milwaukee; W. W. LEATHERS CO., St. Louis; LOWRY MFG. CO., San Antonio; J. A. ROSESTEEL, Los Angeles.

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Haynes Quality Qualified in the Vanderbilt Cup Trials.

The HAYNES 1906 four cylinder REGULAR STOCK TOURING CAR qualified for the Vanderbilt Cup Race in competition with a long list of the most powerful specially-constructed racing cars ever built in America.

Compare the cylinder capacity of the engine in the HAYNES car (5-inch bore x 6-inch stroke) with that of all other entrants. Nutt had been around the course in this car only three times prior to the race and was the only contestant who had never before driven in a race. The only stop he made with the HAYNES car was necessitated by an oil can bouncing into the fly wheel and spilling oil on the master clutch, causing it to slip.

Just think what it means for a stock touring car to win honors from specially built monster racing cars. That is what THE HAYNES STOCK CAR did. IF YOU ORDER A HAYNES 1906 TOURING CAR, YOU GET AN EXACT DUPLICATE OF THE CAR DRIVEN IN THIS CONTEST.

We are now booking orders and closing agencies for 1906 HAYNES CARS. Write to-day.

Haynes Automobile Company,

Kokomo, Ind.

Member A. L. A. M.

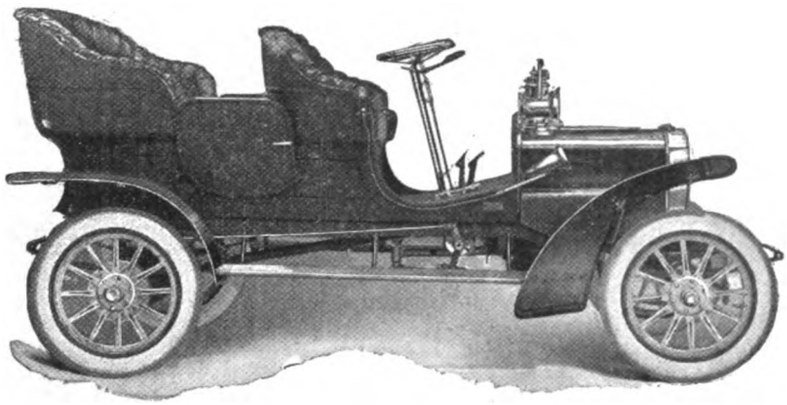
New York **Chicago**

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NO NOISE BONE-RACKING BELTS CHAINS PULLEYS GASKETS TRUSS RODS STRUT RODS GO WITH THE NORTHERN

ITS SILENCE AND SIMPLICITY ARE ON A PAR WITH ITS EASY RIDING QUALITIES. IT IS A COMFORTABLE CAR AS WELL AS A DEPENDABLE ONE.

Detachable Side Entrance Tonneaus Supplied if Desired.



No Delays. Immediate Deliveries Guaranteed.

NORTHERN MANUFACTURING COMPANY, Detroit, Mich.

Member A. L. A. M.

PETER FOGARTY, New York Agent, 142 West Thirty-eighth Street.

AMONG THE LEADERS IN ELIMINATIN' RACE.

Our regular stock model finishes third in Vanderbilt Cup Race trials. Just think what we are offering you this year. It is like this. You sit behind the wheel of a **ROYAL TOURIST** with one hand on the throttle lever. Move the lever an inch or so and you have an ideal vehicle, under perfect control, for city use or country touring. Move the lever a little more and you have a motor car fit to compete with the speed machines especially built for the **VANDERBILT CUP RACE.** Please bear in mind that the famous Royal that did so well in the race last Saturday is the same as the one you buy from us in every particular except, of course, you get a luxurious and handsome body, instead of a couple of tin seats.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 434 South Fifth St. Minneapolis; AUTOMOBILE SUPPLY CO., Lim., 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

"QUEEN"

The name stands for a line of cars that has no equal, either as a selling proposition for the dealer, or an investment for the individual buyer.

Staunch in construction, powerful in action, reliable in operation, and simple in control, Queen Automobiles best meet every requirement of automobile worth.

Queen Runabouts. Queen Det. Tonneaus.
Queen Touring Cars.

Made right and sold right by

C. H. BLOMSTROM MOTOR COMPANY, Detroit, Mich.

C. A. DUERR & CO., Inc. 1787 Broadway, New York City Agents.

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POPE Toledo AUTOMOBILES

Pope-Toledo Victorious.

WINS FIRST PLACE OVER TEN COMPETITORS.

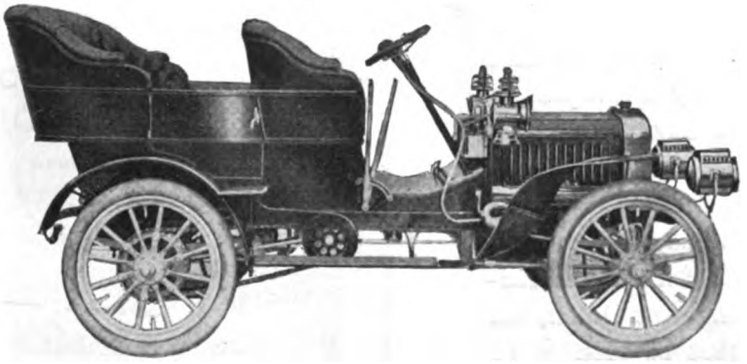
The wonderful performance of our four-cylinder double, outside, chain-driven car in the

Vanderbilt Elimination Trials

of September 23d demonstrated anew the sterling qualities of this "mile-a-minute" machine.

It takes a car of great reliability to cover 113 1-5 miles, exclusive of stops, at the average rate of over 58 miles an hour—traveling mile after mile at an unvarying speed.

We have the new Type X just finished and ready for delivery. It is a dependable car like all Pope-Toledos. Write for full information.



POPE-TOLEDO, TYPE X, 20 H.P.

$2800.

Be Sure the Name "POPE" is on Your Automobile.

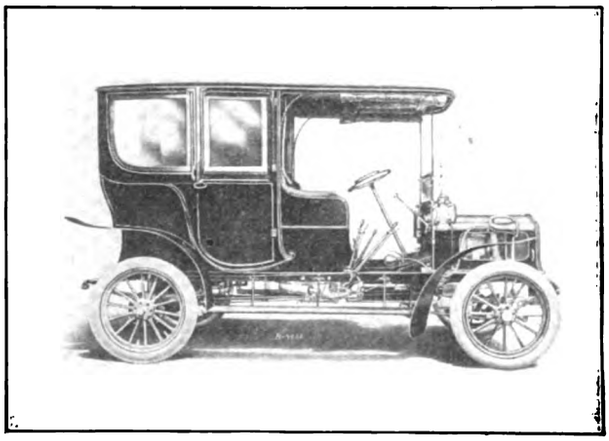
POPE MOTOR CAR COMPANY, Toledo, Ohio.

A. L. A. M.

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The Incomparable WHITE

The Car for Service.



THE WHITE LIMOUSINE

The quality of absolute noiselessness of operation is particularly desirable in a limousine, because in any car with a closed body the noise made by the mechanism is much more noticeable and annoying than in an open vehicle.

Another desirable feature of a limousine is that its speeds respond instantly to the throttle, in order that it may be guided safely and speedily through the crowded city streets.

Both these qualities (inherent in the use of steam power) the White limousine possesses in unique degree. As regards the graceful lines and luxuriousness of equipment and finish, the White limousine must be seen to be appreciated.

Write for further details, regarding price, etc.

WHITE SEWING MACHINE COMPANY
CLEVELAND, OHIO.

Packard

Buffalo, N. Y., July 8, '05

PACKARD MOTOR CAR Co.
Detroit, Mich.

Enter order three additional trucks for Larkin with throttle as recently specified. Telegraph delivery dates quick; will mail deposits today.

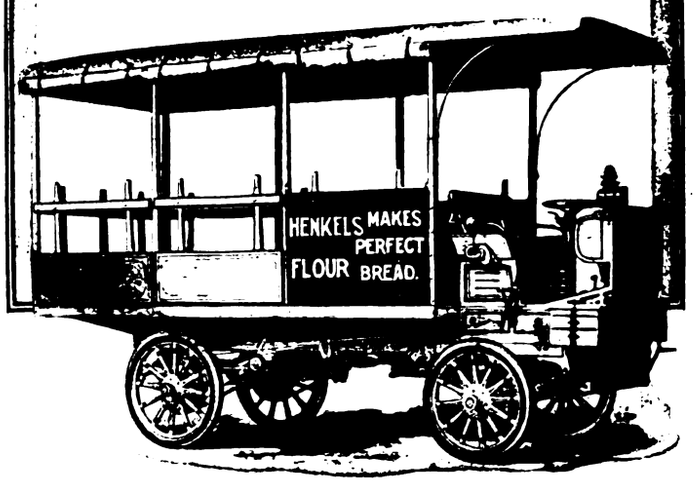
Centaur Motor Co.

There can be only one argument in favor of the Packard Truck more convincing than the above repeat order of the Larkin Co.—that is the money it will save for you in your own business.

These trucks are being operated in a great many different lines of business in various parts of the country. Each one is fulfilling its mission. It is giving satisfaction to its owner. Tell us what your business is and we will show you some records, in your line of work indicating the saving it can make for you.

Normal Load Capacity 1½ tons.
Speed Range 1 to 15 miles per hour.
Price of Chassis, complete, ready for body $2,500 f. o. b. factory.
Body designs and quotations submitted upon application.

PACKARD MOTOR CAR Co.,
DEPT. 8, DETROIT, MICH.
NEW YORK BRANCH, - 1540 BROADWAY.
Member A. L. A. M.



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COMMERCIAL VEHICLE EQUIPMENT.



Diamond

SIDE WIRE ENDLESS SOLID TIRES

They add a "talking point" which helps the sale of cars.
The satisfied customers are constantly stimulating the demand.
Dealers should get our literature, "How to Order Solid Tires."

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

BOSTON—174 Columbus Ave. DETROIT—310 Woodward Ave. SAN FRANCISCO—608 Mission St.
PHILADELPHIA—304-306 No. Broad St. ST. LOUIS—3966 Olive St. DENVER—322 Boston Building.
BUFFALO—715 Main St. CHICAGO—167-169 Lake St. MINNEAPOLIS—611 First Ave. S.
NEW YORK—78 Reade St. CLEVELAND—223 Huron St.

GOODRICH AGAIN!

Another remarkable record made on

GOODRICH TIRES

San Francisco to Los Angeles in 21 hours and the return trip in 20 hours.

No occasion to touch the tires—and the treads looking just like new. The advantages of the Integral Construction and Goodrich rubber on the treads are in evidence everywhere.

WHITE SEWING MACHINE COMPANY
OFFICE: 1878 MARKET STREET.

San Francisco, Cal., August 16, 1905.

Gorham Rubber Co., San Francisco, Cal.

Gentlemen:—Replying to your letter making inquiry with reference to the tires used by Mr. Geo. A. Hensley when he broke the San Francisco-Los Angeles records two weeks ago, beg to state that they were the regular stock Goodrich tires 34 x 4 inches and had been used before this trip for sixty days by Mr. Hensley as they were the original ones that were on his car when he bought it with the exception of one tire, which was changed before the start as a matter of precaution and a new Goodrich casing put on.

Mr. Hensley made the run in the remarkable lapse of time of 21 hours and 12 minutes from San Francisco to Los Angeles, and on the return trip his running time was 20 hours.

Since that time Mr. Hensley has run his car two weeks and up to date has never had occasion to use a pump on any of his tires, and the tread shows hardly a scratch. This is certainly remarkably good work for tires, and I congratulate both yourselves and the B. F. Goodrich Co. upon the uniform quality of the Goodrich tires we have received on the coast this year.

Yours very truly, (Signed) C. H. HAWKINS, Mgr.

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

THE B. F. GOODRICH COMPANY, Akron, Ohio.

NEW YORK, 66-68 Reade st. and 1625 Broadway. BOSTON, 161 Columbus Ave.
BUFFALO, 731 Main St. DETROIT, 80 E. Congress St.
SAN FRANCISCO, 892 Mission St. CLEVELAND, 420 Superior St.
CHICAGO, 141 Lake St. PHILADELPHIA, 909 Arch St.
LONDON, E. C., 7 Snow Hill. DENVER, 1444 Curtis St.



Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

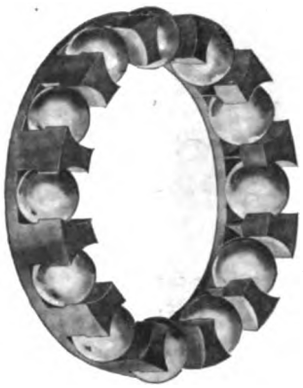
The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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CAGE OR SPACER.

STANDARD ROLLER BEARING COMPANY,

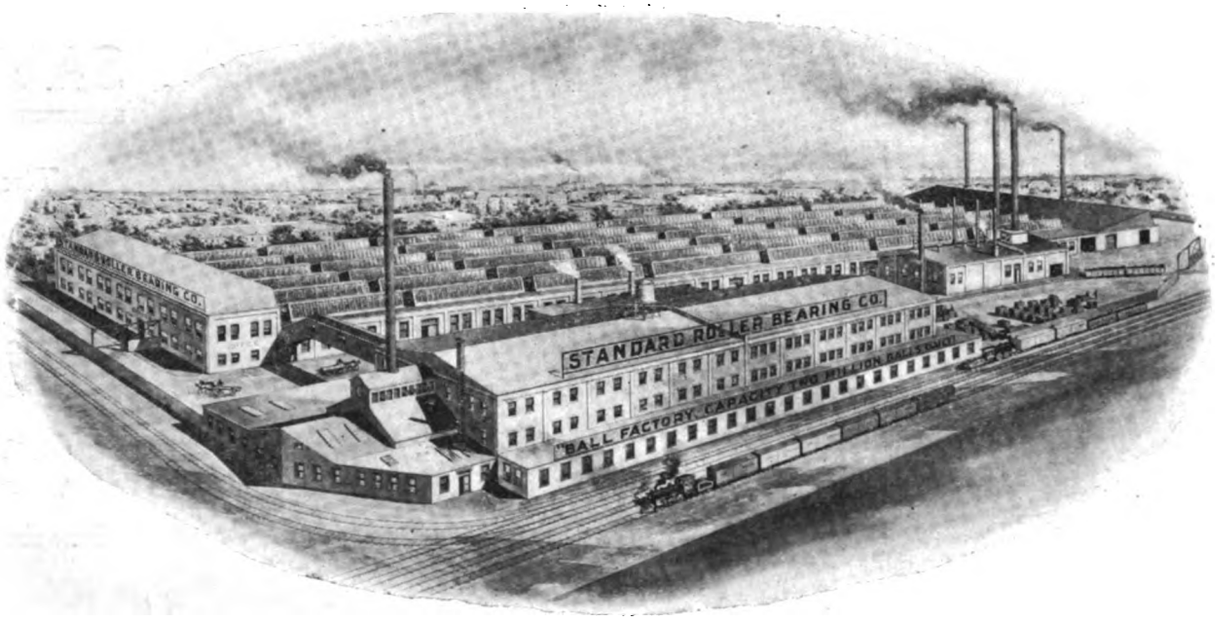
48th & Girard Avenue, PHILADELPHIA, PA.



SILENT TYPE.

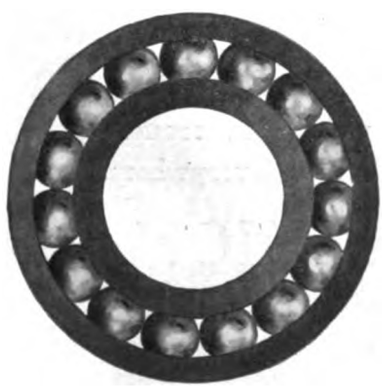
Largest Plant in the World for Exclusive Manufacture of

Anti-Friction Bearings and Automobile Axles.



Total space occupied, 145,000 square feet.
Main Machine Shop, 150 ft. wide x 500 ft. long
Steel Ball Factory, 70 ft. wide x 300 ft. long, three stories in height.

Steel Converting and Tempering Plant, 50 ft. x 110 ft.
Power Plant, Engines and Generators, 800 H. P.
Steel Ball Output, 2,000,000 balls daily.



FULL TYPE.

WE MAKE ANNULAR BALL BEARINGS.

We will Positively Guarantee Prompt Deliveries.

SEND FOR ANNULAR BEARING CATALOG.



FLANGED BEARING.
(Either Full or Silent.)

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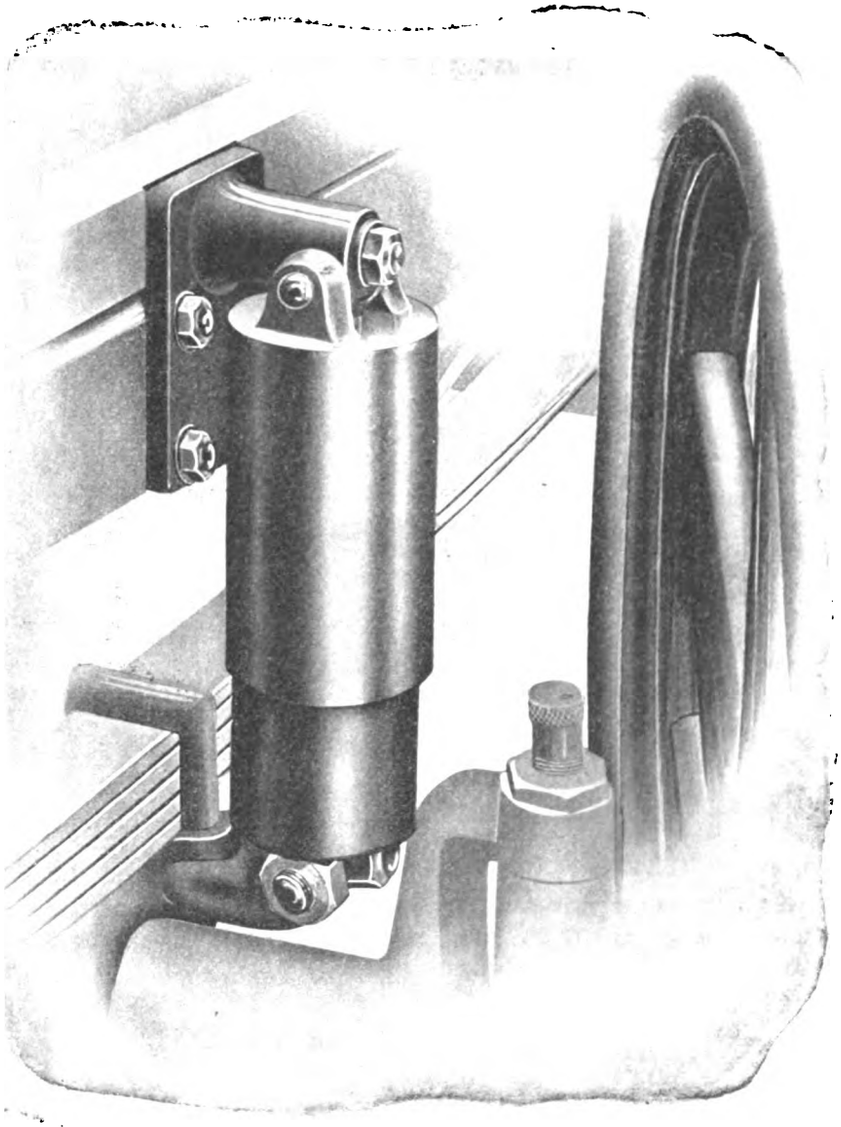
RIDE ON AIR!

Kilgore Automobile Air Cushion

(PATENT ALLOWED)

THE ONLY DEVICE

Permitting the use of Flexible Easy Springs on your car and a Good Steady Speed over roads as they come.



NO

Bumping Axles,

Broken Springs,

Disarranged Motor and Machinery

Telescoped Spines.

SAVES

Tires,

Springs,

Motor and Transmission Repairs,

Oil,

Gasoline

Perspiration.

AN INVESTMENT paying 50% to 500% and large dividends in comfort.
A MONEY MAKER for the Live Agent. Good Agents Wanted Everywhere.

KILGORE AUTOMOBILE AIR CUSHION CO.

S. F. HEATH, Manager.

46 COLUMBUS AVENUE, Boston, Mass.

NEW YORK CITY, E. J. Edmond, 52 W. 43rd St. MINNEAPOLIS, MINN., Barclay Auto. Co. SAN FRANCISCO, CAL., Geo. T. Moore Co.
CHICAGO, ILL., W. R. Johnston, 1326 Michigan Ave.

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G&J

Motor Car Tires

are Resilient—Speedy Economical—Safe

EASY TO HANDLE

Get Our New Tire Manual.

G&J TIRE CO.

Indianapolis,

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

"Firestone"

SIDE-WIRE TIRES

are used on nine-tenths of the American made commercial vehicles. Why? Because manufacturers of commercial automobiles have learned by hard experience that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.

Firestone Tires wear like iron. They hold to the Rim—they give satisfaction.



Then why not "Firestone"?

Firestone Tire & Rubber Co.

Akron, Ohio

New York Chicago Philadelphia Boston St. Louis
San Francisco Los Angeles

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ELECTRIC WELDING BRINGS SUCCESS

ELECTRIC WELDING THOMSON PROCESS

Electric Welding

has banished the word "impossible" from the manufacturer's dictionary—because "impossibilities" become simple operations when our method is applied.

Apply Electric Welding to your own business and watch *results*.

An Economical Saving—

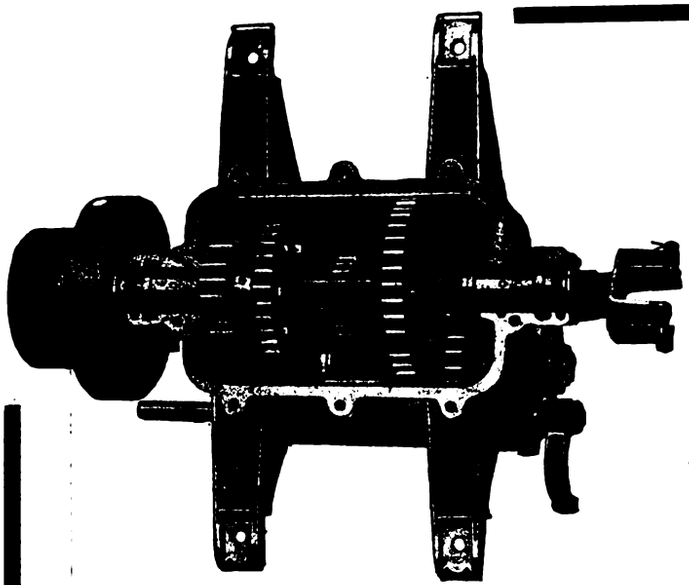
a practical plan for decreasing cost—and improving quality—is a good definition of Electric Welding.

An enquiry will result to your advantage.

To find out exactly what we do, *write us now*.

THE STANDARD WELDING CO.

CLEVELAND, OHIO.



GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE, Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

FRONT AXLE, I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR STEERING GEAR CLUTCH

DISTANCE ROD AND BRACKET PROPELLER SHAFT LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 H. P.

Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 H. P.

Write for Circular No. 12.

THE CARFORD COMPANY, - - - Elyria, Ohio.

Sales Manager: Hayden Eames, Cleveland, Ohio.

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This Car Finished Third.

THE

ROYAL TOURIST

Vanderbilt Cup Car

is an exact duplicate of the

1906 Royal Chassis

and has no specially strengthened or forged parts of any kind. For $3,500 you can buy just such a "ROYAL" Car, including body and touring equipment.

Others are buying them every day.

Why don't you?

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

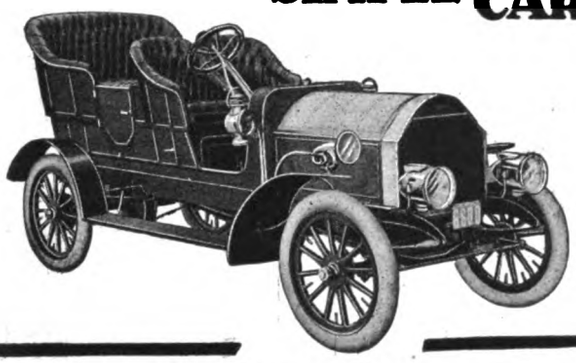
AGENTS:

C. A. DUERR & CO., 68th Street & Broadway, New York.
G. J. DUNHAM 182 Columbus Avenue, Boston.
THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Avenue, Chicago.
G. W. CAPLIN, 424 South Fifth Street, Minneapolis.
AUTOMOBILE SUPPLY CO., Lim., 24 Temperance Street, Toronto.
MOTOR SHOP, 317 N. Broad Street, Philadelphia.
WESTMINSTER AUTOMOBILE CO., 4396 Olive Street, St. Louis.

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GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish.

Luxurious in Appointments.

Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

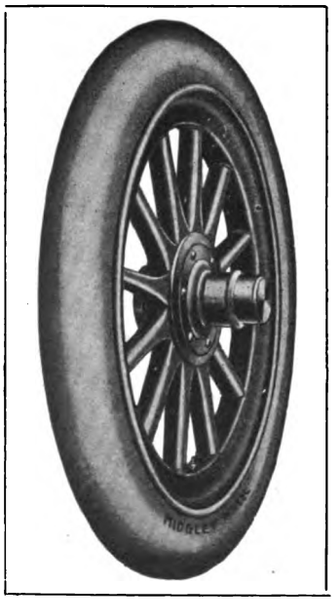
both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40 45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody. Mass., U. S. A.

MIDGLEY
Artillery Pressed Steel Wheel
IS
THE STRONGEST AUTOMOBILE WHEEL MADE.



THE ONLY WHEEL that will always remain absolutely true.

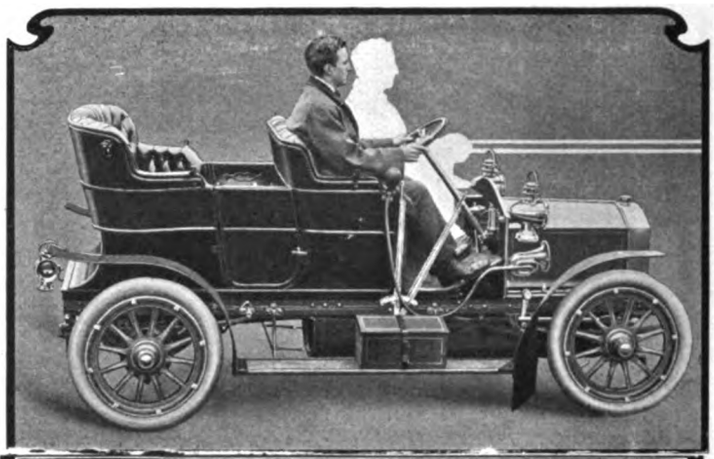
THE ONLY WHEEL that does not require care and attention.

THE ONLY WHEEL that will withstand hard usage, even abuse.

THE ONLY WHEEL that will not shrink, warp or swell, thereby eliminating resetting rims and other annoyances.

Write for Catalogue.

THE MIDGLEY MFG. CO., Columbus, Ohio



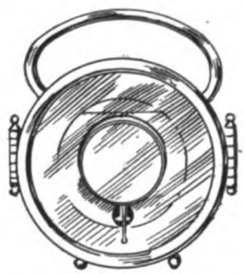
The New AUTOCAR Control
Simple As a Pair of Reins

The control of Type XI Autocar brings automobile driving to the simplicity of horse driving. In the rim of the steering wheel, and forming parts of it, are set two grips, one at the right hand, one at the left. These two grips control the throttle and the spark, regulating the speed of the car from 3 to 35 miles an hour. This arrangement brings the steering and the speed regulating together, so that in all ordinary running the only position necessary for the hands is on the steering wheel.

To be sure this car has a gear shift lever and an emergency brake lever at the right of the driver. The gear shift lever, however, is needed only on particularly hard hills or very bad bits of road. The car loaded with four passengers will climb nearly all hills on the high gear. The foot brakes being ample for all ordinary use, the emergency brake is rarely required. Hence we say that except in extreme cases only one position is required of the hands in driving Type XI Autocar.

This car has four cylinder verticle motor of 16-20 horse power, double side-entrance tonneau, and the smartest lines of any car. It is extremely quiet and vibrationless in running while having great power in proportion to its weight. Type XI Autocar is the ideal car for the man who wants an up-to-date, powerful, four-passenger car without excessive weight. The price of Type XI is $2000. Catalogue giving full description of it and also of Type X Runabout $900, and Type VIII Tonneau $1400, together with name of dealer nearest you, sent free upon request.

THE AUTOCAR COMPANY, Ardmore, Pa.
Member Association Licensed Automobile Manufacturers.



The absolute best in Motor Lamps

THIS
SOLAR PARABOLENS HEADLIGHT

throws most powerful beam of any lamp made, yet burns cool. Simple, safe and sure, no better lamp can be built. The most your dealer will say about the next best is that it is "just as good as a SOLAR"—but why not buy the **standard** and dodge the second best

We stand back of every SOLAR lamp with a guarantee to **you**—a warranty that leaves no room for risk on the buyer's part. You can't buy better lamps—whether oil or acetylene.

Write for booklet—or ask your supply man.

BADGER BRASS MFG. CO.,
Kenosha, Wis.

NEW YORK OFFICE 11 Warren Street.

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MICHELIN TIRES

SIMPLY CAN'T HELP WINNING

THE FOLLOWING LETTER FROM MICHELIN ET CIE IS REPRODUCED FROM L'AUTO OF PARIS, FRANCE.

PYRENEES CUP.

Finding that the winning of this cup would not be of great importance for a tire (1,423 kilometres at touring speed with controls, hills and various coefficients), I made no effort to achieve it. They tell me, nevertheless, that I am the true winner: Sorel in the DeDietrich took the cup.

I also won the prize of the city of Toulouse (La Diane, of Falguiere) and the Dunlop Trophy (La Renommee, a brass by Barras).

No one even pretends that according to the strict interpretation of the rules (page 45), I could have gained the Dunlop Trophy.

I take pleasure in giving my friends and acquaintances their dues, but without taking to myself any great amount of glory.

(Signed) MICHELIN.

N. B.—I read in an advertisement that in winning the 6th class, Baron Henri de Rothschild (Mercedes) used tires of a rival make.

I inisist upon correcting this assertion: The car started equipped with tires of another make, but finished with a pair of Michelin's on the rear wheels which had been purchased at Saint-Gaudens.

OTHERS CLAIM. MICHELIN DOES.

Michelin is Truly the Tire of Achievement.

MICHELIN TIRE AMERICAN AGENCY, Inc.,
6 West 29th Street, New York

Telephone—4657 Madison

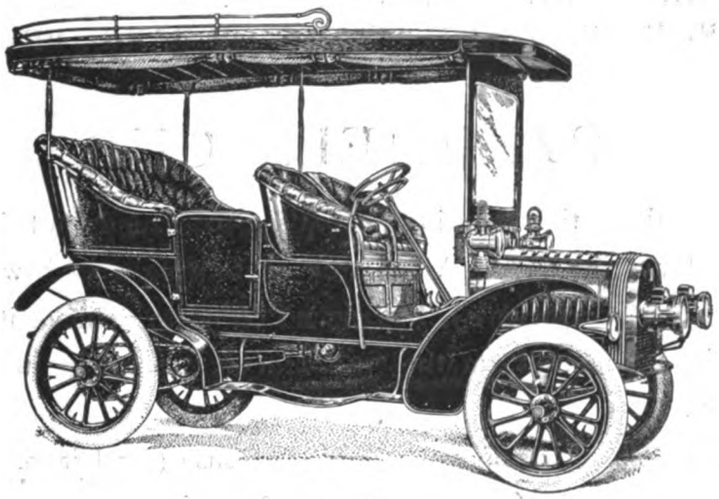
E. D. WINANS, General Manager

BRANCHES

Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
Philadelphia, 322 No. Broad Street.
Washington, 1330 New York Ave., N. W.
San Francisco, 307 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street.
Pittsburg, 5003 Centre Avenue.
Utica, 12-18 Lafayette Street.
Poughkeepsie, 14-20 Catherine Street.
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
Asbury Park, N. J. Main St. and Sewall Avenue
Morristown N. J. 1 South Street.

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Rambler



For the Theatre or Night Use.

The roomy, highly finished Surrey, Type Two. complete with lamps, horn, tools, etc.

$1650.

Seats five people. Entrance to the tonneau at either side. Occupants thoroughly protected from storms by full canopy top with glass front and side and back waterproof curtains which roll down and fasten securely together to the body of the car.

Built for comfort—not for speed. Will surmount ordinary grades without use of secondary gear.

Prospective purchasers may have a practical road demonstration of this car by calling at any of our branches.

THOMAS B. JEFFERY & COMPANY, Kenosha, Wis.

BRANCHES:
CHICAGO, MILWAUKEE,
BOSTON, PHILADELPHIA.

New York Agency,
134 W. 38th St.

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A 20455

THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, September 28, 1905. No 1

A. C. A. SHAW IS SANCTIONED

Club Takes Action to Relieve the Situation—Funny Statement of Reasons.

Sanction for the so-called "independent" show, the one promoted by the Automobile Club of America, and which will be held in the Sixty-ninth Regiment Armory, New York, finally has been issued by the National Association of Automobile Manufacturers. The Motor World last week indicated that such a state of affairs would come to pass and a disturbing factor in the show situation be thereby eliminated.

Without a sanction, all who exhibited at the A. C. of A. show would have been placed in the attitude of "outlaws," and thereby made ineligible to exhibit at the Chicago show or any of the local functions sanctioned by the N. A. A. M. The clubmen did not relish applying for a sanction, but the pressure brought to bear on them by intending exhibitors was too strong to be resisted.

Accordingly, the club applied for a sanction, and on Monday officially announced that one had been obtained. The announcement explained that the sanction was secured "in order to avoid embarrassment to several prominent exhibitors in relation to shows in other cities," and as "the sanction does not interfere is any manner with the open character of the Automobile Club show, its exhibition committee, having in view the general good of the industry, decided that it would be unfair to N. A. A. M. members to ask them to place themselves in bad standing with their own organization."

Black Diamond Officials in Trouble.

The troubles of the embarrassed Black Diamond Automobile Co., Utica, N. Y., are following its sponsors. Transcript of a judgment for $36,201 from Oneida County was filed in New York City on Monday, 25th inst., against Charles E. Turner, a promoter, of 27 William street, and A. Vedder Brower, of Utica. The Sheriff received recently two executions against them aggregating $15,513 in favor of the Utica City National Bank, but could find no property to levy upon. Turner was vice-president and general manager of the Black Diamond Co. and Brower was treasurer. This company was incorporated on April 10, 1903, with a capital stock of $500,000, and a petition in bankruptcy was filed against it on July 25 last at Utica.

Stoddard-Dayton to Enter New York.

The Stoddard-Dayton agency, which was incorporated last week with a capital of $10,000, will open a New York office and garage at 1853 Broadway. They are already showing the new 1906 four-cylinder 35 H. P. Stoddard-Dayton, which is listed at $2,250. C. H. Hill, who is the general manager, has had considerable experience in the handling of motors and accessories throughout the East. He is assisted by James McIlvrid. The agency controls the territory included in the metropolitan district and New York State as far north as Poughkeepsie; also all of Long Island and New Jersey, and Fairfield and New Haven counties, Conn.

Olds Changes New York Agency.

The Olds agency in New York City, heretofore possessed by the Harrolds Motor Car Co., has been taken over by the Oldsmobile Co., of New York, a new company formed by General J. T. Cutting, formerly the head of the Cadillac Co., of New York. The new concern has established itself at 1653 Broadway in the store formerly occupied by F. A. Sanford, the Yale agent, who has retired from business.

Omaha Building a Factory.

The Karbach Automobile Co., which was organized recently in Omaha, Neb., for the express purpose of manufacturing motor cars, is erecting a three story brick building, 22 by 60 feet, at Thirteenth and Howard streets, to cost about $10,000. The new company expects to have its cars, which "will embody new features," on the market by spring.

Baker Trebles its Capital.

The Baker Motor Vehicle Co., Cleveland, has again increased its capital stock—this time from $400,000 to $1,250,000.

INCREASING THE MEMBERSHIP

Motor and Accessory Manufacturers Add to Their List—Preparing to Allot Show Space.

Every director save one was present at the meeting of the Motor and Accessory Manufacturers, which occurred in Syracuse, N. Y., on Friday last, 22d inst. Nothing of moment transpired, however, the appointment of a committee to allot show space and the election of nine new members constituting the chief proceedings. The additions to the roll, which brings up the total membership to 116, are as follows:

Motor Car Specialty Co., Trenton, N. J.; Edmunds & Jones Mfg. Co., Detroit, Mich.; Atwood Mfg. Co., Amesbury, Mass.; Bryant Steel Wheel and Rim Co., Columbus, Ohio; the Garford Co., Elyria, Ohio; W. K. Prudden, Lansing, Mich.; Eastern Carbon Co., Jersey City, N. J.; Schwarz Wheel Co., Philadelphia, Penn., and Connecticut Telephone and Electric Co., Meriden, Conn.

After the business meeting the directors were entertained by the Brown-Lipe Gear Co. at a luncheon at the Yates Hotel, following which was an automobile drive to South Bay, Oneida Lake. The visitors remained at the Sagamore Inn over night. It was planned to have a shore dinner on Frenchman's Island, but owing to a gale of wind which made the lake too rough for comfort, the trip was abandoned and the dinner was held at the hotel. The members then returned to Syracuse in automobiles. The next meeting is to be held in Boston during the second week of November.

Midgley in Hartford Rubber.

At a meeting of the directors of the Hartford Rubber Works Co. last week, Thomas Midgley was elected first vice-president, and will henceforth take an active part in the company's affairs. Mr. Midgley, who has been supplying steel rims to the Hartford people, took up his residence in that city several months since, whilst still retaining his steel wheel and steel rim business in Columbus, Ohio.

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FOREIGN METHODS INFERIOR

Bearings Made in Europe Not as Good as the American—An Expert's Opinion.

R. H. Grant, superintendent of the Standard Roller Bearing Company, Philadelphia, has just returned from an extensive tour of England, France and Germany, where he visited all the principal factories devoted to making automobiles, automobile axles, steel balls and ball bearings. He delved deeply into their methods of making automobile axles, devoting special attention to the Lamoine factory in Paris, the most notable in Europe. A thorough examination was made of their systems of forging, welding asd hardening, the latter being very different from anything used in the United States.

The use of annular ball bearings is very extensive on many makes of foreign automobiles, and Mr. Grant interested himself in the steels used and the processes of hardening and grinding the bearings. As a result he gives as his opinion that the foreign methods of manufacture are much inferior to those used in the United States, both in making and in finishing the bearings, although the Standard Roller Bearing Company will arrange to continue to use much foreign steel for making annular bearings and other products. For a short time, the foreign companies used springs between the balls, to produce a silent type of annular bearing, but this has been discarded, as it proved weak and defective in actual operation. In addition to the full type of annular bearing, consisting of rings filled with balls, a bronze cage or spacer has been used to contain the balls, similar to that made by the Standard Roller Bearing Company for this purpose. The use of a small section of the ring, set in place, and held by a screw, to permit insertion of the balls, allowing the head of the screw to project, has also been discarded, as the loose section, or screw, falls out of place, asd breaks the bearing.

The Standard Roller Bearing Company has secured several large contracts for shipment to European concerns, which shows that the foreign trade is open to the American product, when they are shown that the workmanship is equal if not superior to that which they themselves are making.

Coey Plans Model Garage.

In the new garage which C. A. Coey & Co., the Thomas agents in Chicago, are erecting on Indiana avenue, near Sixteenth street, some new ideas will be installed. The building will be 114 by 170 feet, which Mr. Coey thinks will make it rank as the largest garage in America. There will be a washer for and a wash rack under each car, so that when a car is driven into its locker at night there will be no necessity for moving it until the owner desires again to use it. Only the washer, polisher and chauffeur will have keys to the locker, and the time of each arrival and departure will be recorded. In addition to this garage, Coey & Co. are erecting a two-story salesroom, 50 by 170 feet, at Michigan avenue and Fourteenth street. This firm sold 103 Thomas cars this season, and have placed an order for 200 of them for 1906.

Haynes Starts on Tour of States.

What should prove a profitable form of publicity is now being undertaken by the builders of the Haynes. With J. W. Haynes at the wheel of one of their regular 50-horse power touring cars, of the type which qualified in the Vanderbilt eliminating trial, a start was made from Kokomo, Ind., the home town, on the 19th inst.

With at least one full day's stop in each city in which to visit the Haynes agency and make the acquaintance of prospective buyers by putting the car through its paces for their benefit, the route will follow the comparatively straight line marked out by the New York Central Railroad, stopping at Cleveland, Buffalo, Rochester, Syracuse and Albany, then into Massachusetts, with stops at Springfield, Worcester and Boston, and from there to New York by way of Providence, Hartford, New Haven and Bridgeport. A strike south will be made after leaving New York, in order to take in Philadelphia, Baltimore and Washington. From there a return will be made direct to New York in order to take in the Vanderbilt race, after which the publicity tour will be extended to the Pacific Coast, probably ending up in San Francisco.

The entire trip is being undertaken purely for business, and no attempt at speed or record making will be tried on the way to the coast. Progress will, in fact, depend upon the state of the weather as much as anything else.

In the Retail World.

Work has been begun on the new garage for the Letcher Automobile Co., in San Jose, Cal. It will cost about $10,000.

Pearl S. Bradford, the Newburyport (Mass.) dealer, intends to expand before stocking his 1906 models. Accordingly, another story will be added to his Liberty street garage.

The Curtain-Williams Automobile Co., of Columbus, Ohio, has purchased two lots on Parsons avenue, opposite its present garage. It is proposed to build on the plot a larger station in the spring.

F. K. Mears, of Philadelphia, Penn., has been granted a permit for the erection of a one story garage, 55 by 256 feet, to cost $5,000. It will be located at 220-222 South Fortieth street, that city.

The Great Western Cycle and Auto Co., Minneapolis, Minn., is building a three story gray brick garage on Sixth street, between First and Second avenues, South, to cost $20,000. It will have a frontage of 50 feet and depth of 150 feet.

Prince Wells, of Louisville, Ky., is having plans drawn for the erection of a garage on the Ralph property on Fourth avenue, which has just been acquired at a purchase price of $15,000. The garage will be three stories high and will cost approximately $35,000.

The T. C. Whitcomb Automobile Co., of Cleveland, Ohio, has increased its capital to $10,000. They will rebuild their garage and go more extensively into the agency field for 1906. They have adopted the Rambler as their leader for next year, and will probably add one or two other well known cars to their line.

Although their present garage was built only a short time ago, F. E. Lockwood & Co., the Norwalk (Conn.) dealers, have found it inadequate to meet their growing needs, and, accordingly, will build an addition to the north side of their Water street establishment. To make this possible a plot of ground with forty feet frontage has been purchased.

The Week's Incorporations.

New York City, N. Y.—The Newcomb Motor Co., under New York laws, with $400,000 capital. Corporators—W. A. Newman, J. A. Mooney and T. H. Ferry.

Nichols, Ct.—The Nichols Auto Transit Co., under Connecticut laws, with $5,000 capital. Corporators—Erwin S. Fairchild, Nathan B. Curtis, Edward Nothnagle and Augustus Murr.

New York City, N. Y.—Long-Turney Mfg. Co., under New York laws, with $50,000 capital; to make motors, engines, etc. Corporators—W. L. Kingsley, T. H. Stryker and G. W. Turney.

New York City, N. Y.—Stoddard-Dayton Agency of New York, under New York laws, with $15,000 capital; to deal in automobiles. Corporators—C. H. Hill, C. E. Zimmerman and James McIlvrid.

Hartford, Conn.—Miner Garage Co., under Connecticut laws, with $10,000 capital; to deal in, store and rent automobiles. Corporators—Edward Y. Judd, Samuel A. Miner and Arthur L. Shipman.

New York City, N. Y.—The Mercedes Import Co., under New York laws, with $100,000 capital; to manufacture and deal in automobiles. Corporators—E. C. DeWitt, M. Wineburgh and Arthur Braun.

Sprague Making Large Additions.

The Sprague Umbrella Co., of Norwalk, Ohio, is adding several new buildings to its extensive plant, which, when finished, will make it the largest canopy and top factory in this country.

The growth of the company's automobile trade requires increased space and facilities, and Colonel Sprague states that he is anticipating the additional demands and buildings accordingly.

The new additions are being constructed in the most substantial manner. Some years ago this plant was wrecked by a tornado, was rebuilt, and then wiped out by fire. But the new parts now being erected can be affected, the Colonel says, by nothing except an earthquake.

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LEAVITT SHUTS UP SHOP

Has a Fire and then Pressure of His Victims Causes Him to "Retire"

So far as active participation in business is concerned the Leavitt Motor Car Exchange of perfumed reputation is no more. One after another its victims turned upon it, until taking to the woods must have appeared far preferable to facing a dozen or more irate victims, each bent on having his pound of flesh—at least that it what has happened, and there are a number of individuals who would be glad to pay for information of the whereabouts of Leavitt.

Despite the fact that he was out under $10,000 bail in a civil arrest case, instituted by Gerald Gerome, and has anywhere from six to a dozen actions of one kind or another pending against him, Leavitt continued to do business until Charles Steuerwald, who hails from across the border in Jersey, got after him. Mr. Steuerwald had a Pope-Toledo touring car of last year's model which he was anxious to dispose of, and Leavitt made him such an alluring offer—$2,400—that he was induced to take a thirty-day note for it—the usual procedure. When the note became due and remained unpaid an action was brought, and, although Leavitt's attorney filed an answer to the complaint, no order was obtained from the court for permission to sue, this being necessary, as the defendant was a corporation, and judgment was taken by default. In the mean time the car was sold to T. B. Ackerson, a real estate broker, and Leavitt decamped, a fire a few weeks previous having conveniently occurred in his office and damaged nothing but his books and records.

The Leavitt Motor Car Exchange thus still remains a legal entity upon the books of the State which gave it being as a corporation "to deal in, buy, sell and repair motor cars for profit," but it is doubtful if any more tangible trace of it will henceforth be found elsewhere.

In consequence the many who have paid their good money in one form or another, whether for cars that they could not use to Leavitt, or to their lawyers for prosecuting him, will be equally well off—they will have the experience, but little else.

So far as Mr. Steuerwald is concerned, he has a worthless judgment for $2,434 and some cents, representing the amount of the note and costs, and another man has his car.

Among other expedients, that of calling a meeting of the creditors with a view to putting the concern in bankruptcy was tried, but as the available assets were insufficient to pay the referee it was abandoned.

Fischer Sale Attacked in Court.

Argument was heard before United States District Court Judge Cross, sitting in Newark, N. J., on Wednesday, on the return of rule to show cause why the sale by J. W. Bellis, of Hoboken, receiver for the Fischer Motor Vehicle Co., of the assets of that company at private sale for $8,000, made pursuant to an order of the court, should not be set aside. The order to sell was secured by Otto Horwitz, of New York, a creditor of the insolvent company. The receiver was appointed July 29, and the sale was made September 18. The receiver insisted that the sale was advantageous to the company, and should be allowed to stand, and that it should be confirmed without delay. Mr. Horwitz opposed the sale on the ground that the price was inadequate. Attorney General Robert McCarter, E. Q. Keasbey and James F. Minturn, the latter of Jersey City, representing the greater part of the creditors, insisted that the sale should be confirmed.

Sues Kitto for a Loan.

A civil action which has been brought against William H. Kitto, president of the Simplicities Auto Co., of Middletown, Conn., has interfered with the purpose to wind up the affairs of the concern. The Warwick Cycle and Automobile Company, of Springfield, has brought proceedings against Kitto to recover $1,000 loaned to him, and the Simplicities Company, which Kitto claims is indebted to him, has been garnisheed for the amount. As a result of these proceedings the special meeting of the stockholders which was called to act on a vote of the directors to wind up the concern has been postponed.

Kruger Organizes in Milwaukee.

The Kruger Mfg. Co., of Milwaukee, Wis., has been organized with a paid up capital stock of $15,000. A four-story building will be erected near the foot of Biddle street, in which, it is said, the new company will build automobiles and conduct a general garage business. The officers are: President, Julius Roehr; vice-president, John McCoy; secretary, Ross McCoy, and treasurer, Henry Kruger.

Declares Insurance Rates Off.

Advices from Boston state that the New England Insurance Exchange has declared off all rates on automobiles, permitting each company to change what it pleases. Hitherto the rate was 3 per cent, and the marine companies were enabled to corral the business by getting under that figure.

Worcester Garage in Trouble.

John A. Dean, the Worcester, Mass., garage man, has filed an involuntary petition in bankruptcy. His debts amount to $3,850.28, of which $400 is secured. There are about one hundred unsecured creditors. Dean's assets amount to $287.

Bates to Lease Lansing.

According to advices from Madison, Wis., the Bates Automobile Co., of Lansing, Mich., purposes moving from the Michigan city to Madison. A deal for the large building formerly used by the Schredder Mfg. Co. has practically been closed.

LICENSED MAKERS' BUSY SESSION

Nothing Made Public but Chance Remarks Indicate Some Important Happ nings.

From the attitude of those who attended the meetings of the Association of Licensed Automobile Manufacturers in New York on Tuesday and Wednesday of this week, it was made plain that matters of unusual moment had been considered.

It was admitted that the drawing for space in the Madison Square Garden Show had occurred, and that every one is not only satisfied but immensely pleased with the arrangements that have been made. Practically all the exhibitors will have to do will be to deliver their cars at the door of the building. From a chance remark, it is known also that heaven, or, at any rate, a broad expanse of delicately painted blue sky, will cover the exhibits. The sky, with its twinkling stars, will completely hide the roof of the big garden.

Aside from admitting the allotment of spaces, none of the licensees would talk of what occurred at the meeting. Indeed, it was plainly stated that "nothing for publication will be given out." Remarks let fall, however, indicate that prices and discounts were the subjects of discussion, and that the engineers, or mechanical branch, presented a report of some sort, Henry Souther and one or two other engineers being in actual attendance.

There is good reason for stating, also, that the A. L. A. M. and the tire manufacturers have come to an agreement respecting tire weights and sizes for next year.

"Well, the tire matter has been settled," one of those present at the meeting was heard to remark, in a tone of undisguised elation.

"Yes, I know it," responded the party addressed. "The settlement will save me $11 on every one."

Will Make Radiators in Rome.

Papers were taken out last week for the incorporation of the Long-Turney Mfg. Co., of Rome, N. Y., with a capital stock of $50,000, all of which, it is stated, has been paid in. The company, which is an offshoot of the Long Mfg. Co., of Chicago, will manufacture automobile radiators, spiral tubing and other metal specialties, spiral tubing and the three story brick building in Rome, just vacated by the Utica Industrial Co. Dr. W. L. Kingsley, who will be president of the new company; Thomas H. Stryker, G. W. Turney and J. S. Hasleton, of Rome, and J. B. Long, of Chicago, are named as incorporators.

Unwin Out of the Harrolds.

Harry Unwin, manager of the Harrolds Motor Car Co., the Pierce agents in New York, has resigned his office and severed all connection with the company, of which he was the organizer.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident-Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintainance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 784-786 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 828 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 428 So. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS 3908 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1330 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1084 So. Main St.

HERE'S ANOTHER HOT ONE

from a Western Dealer who, for obvious reasons, wishes his name withheld.

CADILLAC AUTOMOBILE CO.,
Detroit, Mich.

Gentlemen:--

We have noted with interest your fable on "Tale of Twisted Prices" in the current issue of Motor Age. We were in a position to see the point without the use of a microscope. In fact, we got stung a little ourselves; but that was a trivial matter in our estimation as compared with the effect on some of our good customers. Now, we do not feel that it will be a good thing for us to walk up to the stinger again, and we are seriously considering the advisability of making some other line our leader for 1906, and the particular object we have in writing this letter is to inquire whether you would, under any circumstances, consider a proposition to cut out a certain amount of territory now handled out of ------ and ------ and make a direct contract at this place.

The above dealer is a good one and has sold a large number of cars, has taken good care of his trade, maintained the prices which the maker had fixed for him, but, with what result? Can any honest dealer square himself with his trade when placed in a like position? We doubt it. Cadillac dealers can face everyone of the 3,700 owners of 1905 single cylinder Cadillacs and honestly say:—"The Cadillac prices were right at the beginning, they are right now and will be next year."

CADILLAC AUTOMOBILE CO. - - Detroit, Mich.

Members of Association of Licensed Automobile Manufacturers.

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The Tinkering with the American Team.

Whether or not the Vanderbilt Cup Commission reverses itself—of which there appears to be small likelihood—one thing is beyond the shadow of doubt—the elimination race enhanced the reputation of the American stock car in no small measure.

For that reason, it was worth all it cost, and more. It is the stock car in which the man in the street is interested when it comes to making a purchase. Though the pill administered to the Haynes and Royal entrants may appear a bitter one, it is not as bitter as it seems.

There is glory enough for all, and their shares of it are too great and too brilliant to be lessened or dimmed by anything that may have been done or that may be done.

Not to credit the members of the Cup Commission with honorable and patriotic motives is churlish and despicable to a degree. They are serving the cause unselfishly, and have naught to gain. Their situation was not an enviable one. It is plain to see that they thought not of men nor of machines, but of the glory of all America. But their rejection of the Thomas car is the one weak point in their armor. It is an action which not even their friends can successfully defend. But their own statements leave them bereft of sound argument. The Thomas car is a special racer, designed and built for the event. It is the product of a known and established manufacturer. It performed well. Its mishap was a trivial one.

If, as appears to be the case, horsepower was the deciding element in the judgment of the commission, then the Thomas is equal with the car that finished first. Save for its rated horsepower, the Christie car had not and has not a solitary attribute that entitled it to superior favor. Practically everything about it is an unknown and untried quantity. It is not the product of an established automobile manufacturer. It has shown no speed save for short distances on marblelike beaches. Its time for one good circuit of the Long Island course is not comparable with the speed attained by the Thomas. It is the testimony of all whose business it was to observe the action of the cars, that the Christie acted like a rubber ball—that its forward half is not on the road more than half the time.

There is not a single redeeming thing that can be said in defence of the Commission's action in this regard, and it deserves the condemnation it has received, separate and apart from the other cars concerned. If the Commission has the courage that inspired its initial action, it should explain its action or manfully admit that it erred on one point at least, and, having erred, correct it.

Foreshadows of the New Models.

Now that the 1906 models are being announced in rapid succession, their specifications are such as utterly to refute the prophecies of those ill informed alarmists who have been predicting radical changes for next year's cars of a nature that would cause those turned out in 1905 to appear antiquated.

Take any of the new cars of which next year's features have already been made public, and, without exception, they will be found to differ so slightly that to the ordinary observer it will be difficult to distinguish the 1906 car from its successor of the same make when on the road. Perhaps the chief characteristic noticeable, particularly in the case of those makers who have hitherto confined their efforts to touring cars of not greater than 24 to 30 horsepower, is an increase in size and power. Corresponding increases in the size and capacities of the other essentials have naturally been necessary to conform to the larger motors, and it is in this respect mainly that most of the changes, where there are any, will be found.

Larger carburetters, pumps and transmissions, heavier gears for the change speed gear box, these with whatever other refinements that may have suggested themselves to the maker, constitute the points in which probably the great majority of the 1906 cars will differ from their predecessors of the present year, which in many cases have been their prototypes.

Despite all that was said at the opening of the present year regarding the danger limit having been reached and in some cases exceeded where the length of the wheel base was concerned, the new comers in many instances will show still further increases, although these, in the main, will be small; nothing like the jump from the short, dumpy car to the long, low and easy running machine that has been the rule rather than the exception since the shortcomings of the former were recognized.

As already pointed out in these columns, there will be more or less change where the ignition is concerned, but it will be a shifting process more than anything else. From accumulators to magneto, and vice versa, will be one of its characteristics, though in the case of the more expensive cars the equipment will include both these forms. The light car will remain loyal to the dry cell, and, on the whole, little or nothing new is looked for in this department.

The car with 30 to 50 horsepower will, doubtless, become the accepted standard for touring purposes, and anything between that and the runabout will be generally classed as a "light touring" car, a classification that will, in consequence, include close to 70 per cent of all the cars turned out for next season's selling.

The time to look for radical changes that will shelve each year's car upon the appearance of its successor passed with the adoption of the present type.

There always will be those who question the influence of sport on trade, and particularly such sport as automobile road racing. But its good influence was never made so plain as by our Paris letter, published in another column. How it practically established the industry in Italy and made that country world famed in a mechanical art is set out so clearly that none can misunderstand.

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THE REAL ELIMINATING TRIAL

Arranged in Advance and Consummated in a Clubroom—Three Cars Loses Places on American Team and a Fury Ensues.

Without warning, or with small warning, the Vanderbilt Cup Commission hurled a thunderbolt late Monday afternoon last. These members had foregathered at the rooms of the Automobile Club of America: Robert Lee Morrell, W. K. Vanderbilt, Jr., E. R. Thomas, T. H. Hilliard, E. T. Birdsall and S. M. Butler, of New York; E. H. R. Green, of Dallas, Tex.; George L. Weiss, of Cleveland; F. C. Donald, of Chicago; A. L. Riker, of Bridgeport, Conn., and J. L. Breese and Secretary Batchelder of the A. A. A. Before the bolt was hurled in formal shape Messrs. Breese and Riker retired, the former because of being the nominator of the Christie car, and the latter because he was interested in the Locomobile racer.

Some three weeks ago Chairman Morrell had caused it to be known that the committee reserved the right to select the five cars which in its judgment were deemed most capable of capturing the cup. The announcement caused some mild comment at the moment; but its full significance was not fully grasped.

That some inkling had escaped that the commission purposed bringing the ruling to bear at the meeting on Monday was evident. Newspapermen and either the competitors themselves or representatives of nearly all of the cars that had competed were on hand. They all knew what was to be done—that for the Royal, Haynes and Thomas cars that had qualified in the race on Saturday were to be substituted the White, the Lytle Pope-Toledo and the Christie, each of which had met with accident and failed to finish the contest. It was discussed freely, and when James L. Breese, who was supposed to have retired from the conference before action was taken, appeared in the ante-room, he was promptly approached by the reporters.

"What reason will the committee give for its action?" he was asked.

"Reason?" he jerked out grandiloquently through his prominent lips which a beard fails to hide. "We give no reason; we just did it."

The representatives of the Thomas, Haynes and Royal entries sent in their cards and asked for a hearing, but none was granted.

No really formal announcement of the decision was made. As has been made evident, none was necessary. When Secretary Batchelder came out of the room he was promptly surrounded. Every one was seeking reasons. Batchelder was diplomatic. He did not say a great deal. The two bits of news brought out were that the Christie car had been accepted conditional on its being driven by Mr. Christie himself, and that the reason no hearing was accorded when it was asked for was because the vote already had been taken. It was left for Chairman Morrell to give the explanation. It was short and to the point.

"The fact of it is we were up against a hard proposition. The committee felt it represented the American people in an endeavor to keep the Vanderbilt Cup in this country, and we picked the cars we believed to be the fastest to meet the powerful foreign machines," was all he said.

"It must be remembered that the manufacturers of the Pope-Toledo, White and Christie machines have gone to great expense in developing high speed cars, and therefore deserved consideration," was the suggestion of a member of the cup commission that seemed to throw some light on the decision.

Then the storm burst. Words—that is, printed words—are not equal to the task of expressing the indignation and denunciation "Robbers!" was the mildest of the terms applied to the cup commissioners.

"Use the very strongest language the law will permit you to print, and put it in our mouths. Nothing you or any one else can say will express our feelings too strongly or too bitterly. The whole thing is a most damnable outrage." This was what one of those affected by the decision had to say when approached by a Motor World man.

"If we were to be robbed of the fruits of our victory," said V. E. Minich, of the Haynes Automobile Co., who voiced the sentiments of the others, "why was our money taken? If the team was to be selected regardless of results, why was an eliminating race held? Was this done simply to make us feel we had obtained value received? We entered this contest in good faith. We paid an entry fee of $500, and we directed the best efforts of the factory to the construction of one of our 1906 stock cars at a time when we were busily engaged in completing our 1905 output.

"It cost, in addition, several thousand dollars to send the car and a force of men to Long Island to prepare for the race. In return for this, after fairly winning a place in the team, we are told by the commission that they have thrown out our car and two other cars that finished the trial race so that their places may be taken by machines that were disabled in that race. What kind of a deal is that?"

Twenty-four hours had the effect of slightly lessening the bitterness of the situation. There was talk of applying for an injunction restraining the cup commission from altering the result of the race, and later of suing for the return of the entry fees, but as yet nothing of the sort has been done.

"The brutality of the whole affair is what makes it hurt so much. It was bad enough to have the verdict prearranged and so generally known that it was discussed even before it was rendered, but to be denied a hearing is to be denied the common courtesy that is accorded to everything short of a dog," is the way one interested but impartial man viewed the situation. "How such a lot of men as compose the commission could be so lacking in tact and diplomacy in handling such a delicate matter is beyond my understanding. Their treatment was positively brutal. The men they had to deal with are not fools. I honestly believe if they had been approached in the proper spirit that they would have met the committee half way, and what has been made a nasty mess would have ended in a love feast."

Accepting as final the re-elimination by the cup commission of the team to represent America in the Vanderbilt Cup race on Long Island on Saturday, October 14, the teams will be constituted as follows:

American Team.

Bert Dingley	60	Pope-Toledo
Joseph Tracy	90	Locomobile
Herbert H. Lytle	70	Pope-Toledo
Walter White	40	White
Walter Christie	90	Christie

French Team.

Duray	120	De Dietrich
Sisz	100	Renault
Wagner	80	Darracq
George Heath	120	Panhard
Hemery	80	Darracq

German Team.

Baron de Caters	120	Mercedes
John B. Werden	120	Mercedes
Foxhall Keene	120	Mercedes
Camille Jenatzy	120	Mercedes
Werner	120	Mercedes

Italian Team.

Vincenzo Lancia	110	F. I. A. T.
Felice Nazzaro	110	F. I. A. T.
Emmanuel Cedrino	110	F. I. A. T.
Louis Chevrolet	110	F. I. A. T.
Paul Sartori	90	F. I. A. T.

Vincenzo Lancia and Felice Nazzarro, of the Italian team, arrived in New York this week, and the other three F. I. A. T. drivers—Chevrolet, Cedrino and Sartori—are residing here. Camille Jenatzy, one of the Mercedes drivers of the German team, also set foot on American soil this week, and the remaining Germans and Frenchmen are daily expected.

Dayton Club to Disband.

Dayton, Ohio, will soon be minus an automobile club. At the September meeting of the Dayton Automobile Club, because of the laxity of interest and non-support by the members of the club, and because expenses exceed the revenues, it was resolved to close the clubrooms at Nos. 14 and 16 South Jefferson street and eliminate expenses. It was further resolved to sell the property at public auction on the second Friday in October and to disband the club not later than November 1.

Bennett Cup to Go to Italy.

It is reported that the future of the Bennett Cup is at last about to be definitely settled. The donor himself is said to have signified his intention of devoting the trophy to a contest for touring cars, and it is thought to be probable that the custody of the cup will be entrusted to the Automobile Club of Milan, Italy. The latter country will, in consequence, be the scene of the first contest.

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The Tale of the First Eliminating Trial

How the Race was Run and Won that Did Not Decide the Make-up of the American Team—Stock Cars Make a Superb Showing—Two Big Favorites Bowled Out Early.

VANDERBILT RACE TRIAL SUMMARY.

Entrant.	Car.	Driver.	First lap. 28.3 miles. H.M.S.	Second lap. 56.6 miles. H.M.S.	Third lap. 84.9 miles. H.M.S.	Fourth lap. 113.2 miles. H.M.S.	Time by laps: First lap. H.M.S.	Second lap. M.S.	Third lap. M.S.	Fourth lap. M.S.
Albert L. Pope.....50 h. p.	Pope-Toledo.....	B. F. Dingley.....	0:27:58	0:59:05	1:32:40	2:00:50	0:27:58	31:07	33:35	28:10
Dr. H. E. Thomas.....90 h. p.	Locomobile.....	Joseph Tracy.....	0:31:27	1:02:40	1:32:36	2:01:49	0:31:27	31:13	29:56	29:13
E. D. Sherman.....50 h. p.	Royal Tourist.....	Robert Jardine.....	0:34:44	1:08:05	1:43:41	2:19:18	0:34:44	33:21	35:36	35:37
Elwood Haynes.....50 h. p.	Haynes.....	Frank Nutt.....	0:35:38	1:14:23	1:49:58	2:23:32	0:35:38	38:45	35:35	33:34
H. S. Houpt.....60 h. p.	Thomas.....	Montague Roberts.....	0:30:53	1:07:15	1:48:05	2:29:40	0:30:53	36:22	40:50	41:35
James L. Breese.....60 h. p.	Christie.....	George Robertson.....	1:50:37	2:23:15	Stripped tires.		1:50:37	32.38	——	——
Colonel A. A. Pope.....75 h. p.	Pope-Toledo.....	H. H. Lytle.....	0:28:44	Broke universal joint.			0:28:44	——	——	——
E. H. R. Green.....60 h. p.	Franklin.....	W. F. Winchester.....	0:36:46	Broke universal joint and fuel tank.			0:36:46	——	——	——
Rollin H. White.....40 h. p.	White.....	Walter C. White.....	1:07:52	Broke universal joint and water tank.			1:07:52	——	——	——
L. M. Palmer, jr.....40 h. p.	Matheson.....	Ralph Mongini.....	Piston "seized" in cylinder.				——	——	——	——

Quite unexpectedly, two trials were necessary to decide the make-up of the team that shall represent America in the race for the Vanderbilt Cup on October 14.

As per programme, the first trial occurred on the Long Island course on Saturday morning last, 23d inst. The second trial took place on Monday night, 25th inst., in the rooms of the Automobile Club of America, in New York City. W. K. Vanderbilt, Jr., the donor of the cup, was referee of the road trial. He also was present at the meeting of the Vanderbilt Cup commission, which sat in judgment and rendered the verdict in the second trial—a verdict that unloosed a hell of contention and denunciation.

In Monday's trial on the road these men and these cars qualified: 1, Bert F. Dingley, 60 horsepower Pope-Toledo; 2, Joseph Tracy, 90 horsepower Locomobile; 3, Robert Jardine, 40 horsepower Royal; 4, Frank Nutt, 50 horsepower Haynes; 5, Mortimer Roberts, 60 horsepower Thomas.

In the clubroom trial on Monday the qualification of Dingley and Tracy passed unchallenged, but for Jardine, Nutt and Roberts there were substituted H. H. Lytle, 75 horsepower Pope-Toledo; Walter C. White, 40 horsepower White, and Walter Christie, 120 horsepower Christie, each of whom in the road trial suffered an accident that prevented him from completing the full distance of 113.2 miles, made up of four circuits of 28.3 miles. Despite the storm that is blowing there is small reason to believe that the result of the second trial will be altered.

This story has to do only with the first trial—the race over the pipe shaped course laid out in the most picturesque, rolling portion of Nassau County, N. Y., a portion in which



DINGLEY.

houses are few and far between, and in which for the amount of travel to which they are subjected, much of the road is ununderstandably good. Perhaps it is due to the fact that Wealth has not a few estates in the vicinity.

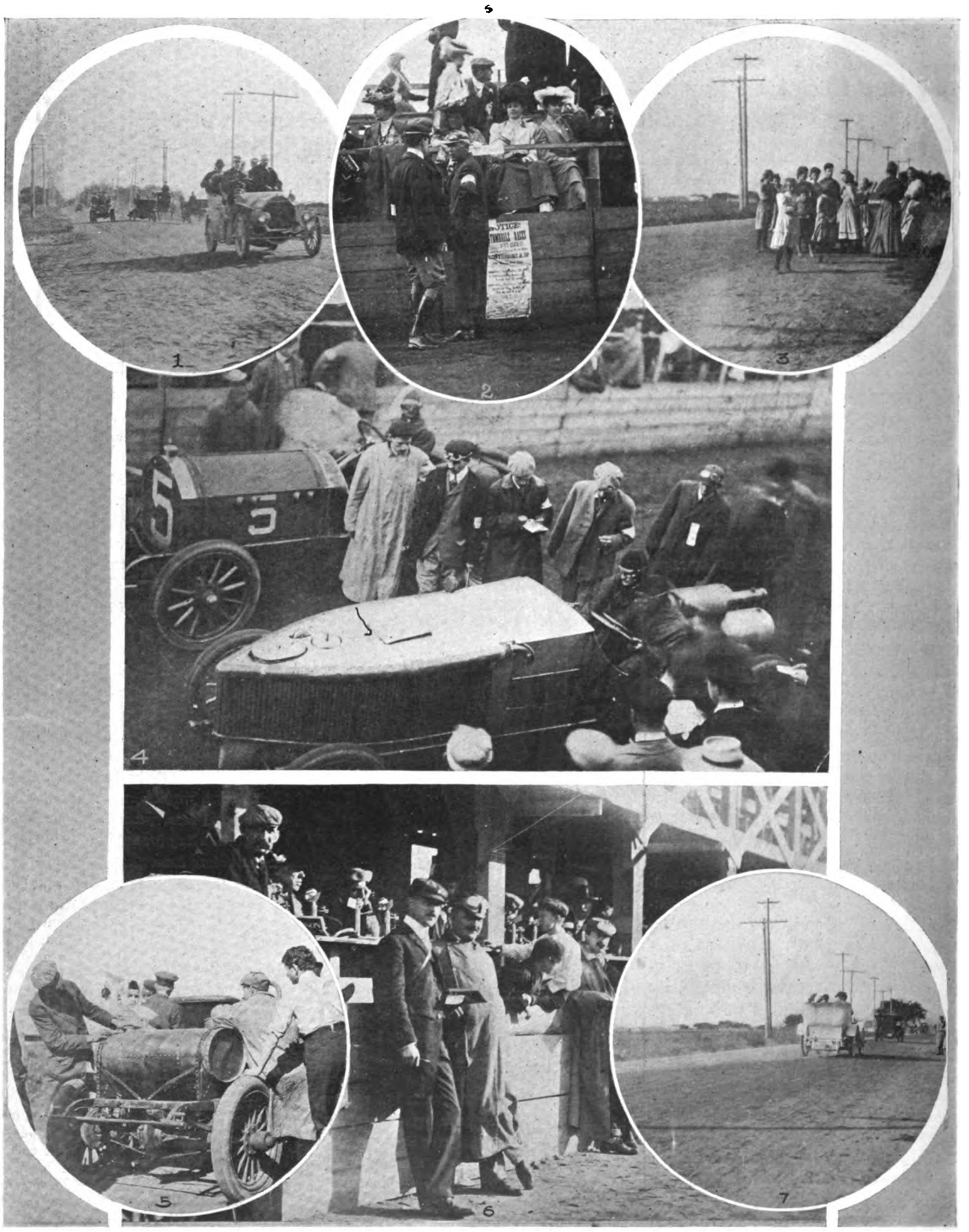
His victory has been heralded in so many places in such big, black type that he's a queer sort of individual who does not know that very, very early in the morning of September 23 Bert Dingley, driving A. L. Pope's 60 horsepower Pope-Toledo, "skiddooed" over that 113.2 miles of Nassau County highway at a clinking pace—2 hours and 50 seconds, equal to 56¼ miles an hour, beating the second man, Joseph Tracy, in Dr. H. E. Thomas's 90 horsepower Locomobile, by a scant 59 seconds.

In their settings these big road races differ little one from the other. The men, the cars, the incidents, the sidelights only—or chiefly—are different. The night before men in motor cars and men not in motor cars gather in large numbers at the hostelries near to the starting point. Some of the men sleep; some drink themselves to sleep; some sleep not at all. All these races start at about the time the hens are leaving their roosts, and long before the first cock has crowed or the sun has lifted the mantle of night all men, bright eyed and heavy eyed, native and visitor, are astir. Motor cars, their big, bright orbs piercing the gloom, fill the roads, and there are horse drawn wagons and bicycles and motor bicycles and men, women and children afoot—all, all trending toward that long, unpainted pine structure denominated a grandstand.

There they stop; there they scatter—cars are parked, many men and a few women seat themselves in the stand; more of them range themselves on either side of the road. Men with broad ribbons on their left arms dart hither and thither or loll in waiting idleness. They are the officials. Native yokels with a fluttering ribbon pinned on their coats stride up and down. They are the special constables, full of their brief authority. There are other natives—they bear a red or a yellow flag, or both. They are the signalmen—the men who give the signs of safety or of danger, to which few give heed. Like the constables, the race is placing an honest dollar in their pockets that otherwise would not be there.

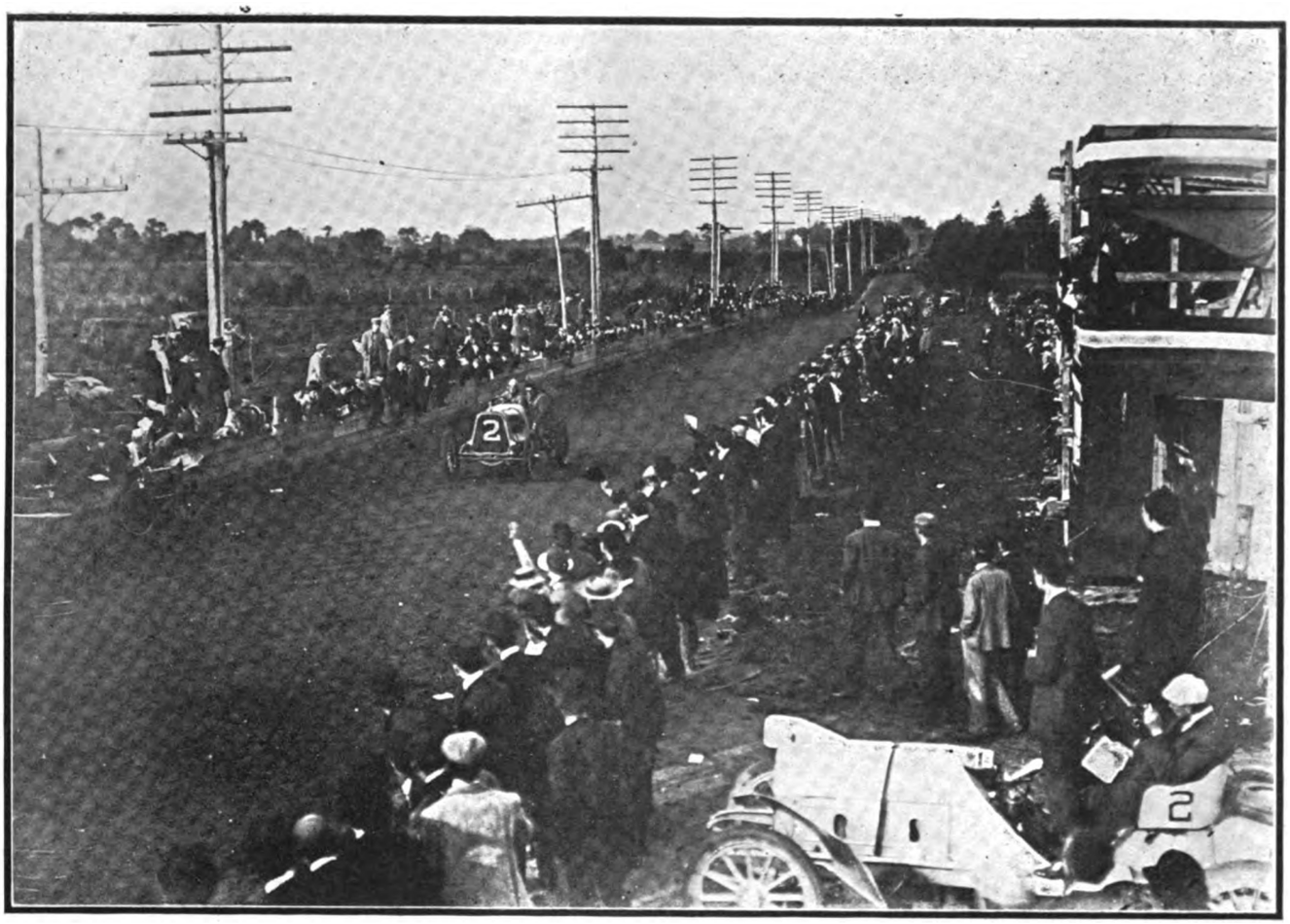
The first faint streaks of dawn find eight

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1. HOMEWARD BOUND. 2. REFEREE VANDERBILT, ASSISTANT REFEREE PARDINGTON AND THE VANDERBILT PARTY. 3. INTERESTED SPECTATORS. 4. TRACY AND WHITE AWAITING THE WORD. 5. EXAMINING THE ROYAL. 6. THE TELEPHONE BOOTH. 7. ON THE HOMEWARD WAY.

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DINGLEY, VICTORIOUS, DASHING DOWN THE HOMESTRETCH.

or ten or a dozen big belching motor cars containing each two men in more or less fantastic dress, near or nearing the grandstand—the starting point. They are the contenders—the centres of interest. Gaping crowds stare at them or gather round. Most of the men are white faced—their skins are suggestive of paste. Obviously they are nervous and are seeking not to show it.

Carry this picture in your mind's eye and you have a picture of the setting of all these great races—a picture of the setting of the race of Saturday last. In small wise does this setting differ here or abroad. The strengthening day may disclose a background of hill or plain that is unlike, but all else—nearly all else—is the same. The day discloses that group of throbbing giants, compactly welded of steel and iron, awaiting the time and word that will cause them to bound forward on the long, black ribbon—the stretch of oiled road that narrows to nothingness in the far distance.

There were ten of them gathered there at Mineola at dawn on Saturday last. There should have been twelve. Carl Fisher, with his big Premier—No. 11—and Tom Cooper, with his well tuned Matheson—No. 10—were the absent ones. The Premier could not "make the weight"—2,204 pounds—and to make it the Cooper car had been fitted with a lightened lubricating system; it failed to serve; the engine overheated and "seized" the day before, and damage enough was done to keep it out of the fray.

The ten that lined up for the honor of entering the race of October 14 and seeking to wrest from France the massive silver trophy carried from these shores a year ago were:

No.	Car.	Driver.
1.	50 h. p. Haynes	Frank Nutt
2.	60 h. p. Pope-Toledo	Bert Dingley
3.	40 h. p. Matheson	Ralph Mongini
4.	40 h. p. White	Walter White
5.	90 h. p. Locomobile	Joseph Tracy
6.	60 h. p. Christie	Geo. Robertson
7.	40 h. p. Royal Tourist	Robt. Jardine
8.	60 h. p. Thomas	M. Roberts
9.	60 h. p. Franklin	W. F. Winchester
12.	75 h. p. Pope-Toledo	H. H. Lytle

WATCH TICKS AND TENSION.

They started in this order at two minute intervals. Each car bore on its front and on its sides the number that accorded with the order of its starting. Each was in readiness.

Daylight—soft daylight—flooded the country. It was nearing 5:32 o'clock.

"Get ready, Nutt. You've got exactly five minutes," remarked Starter Wagner, watch in hand.

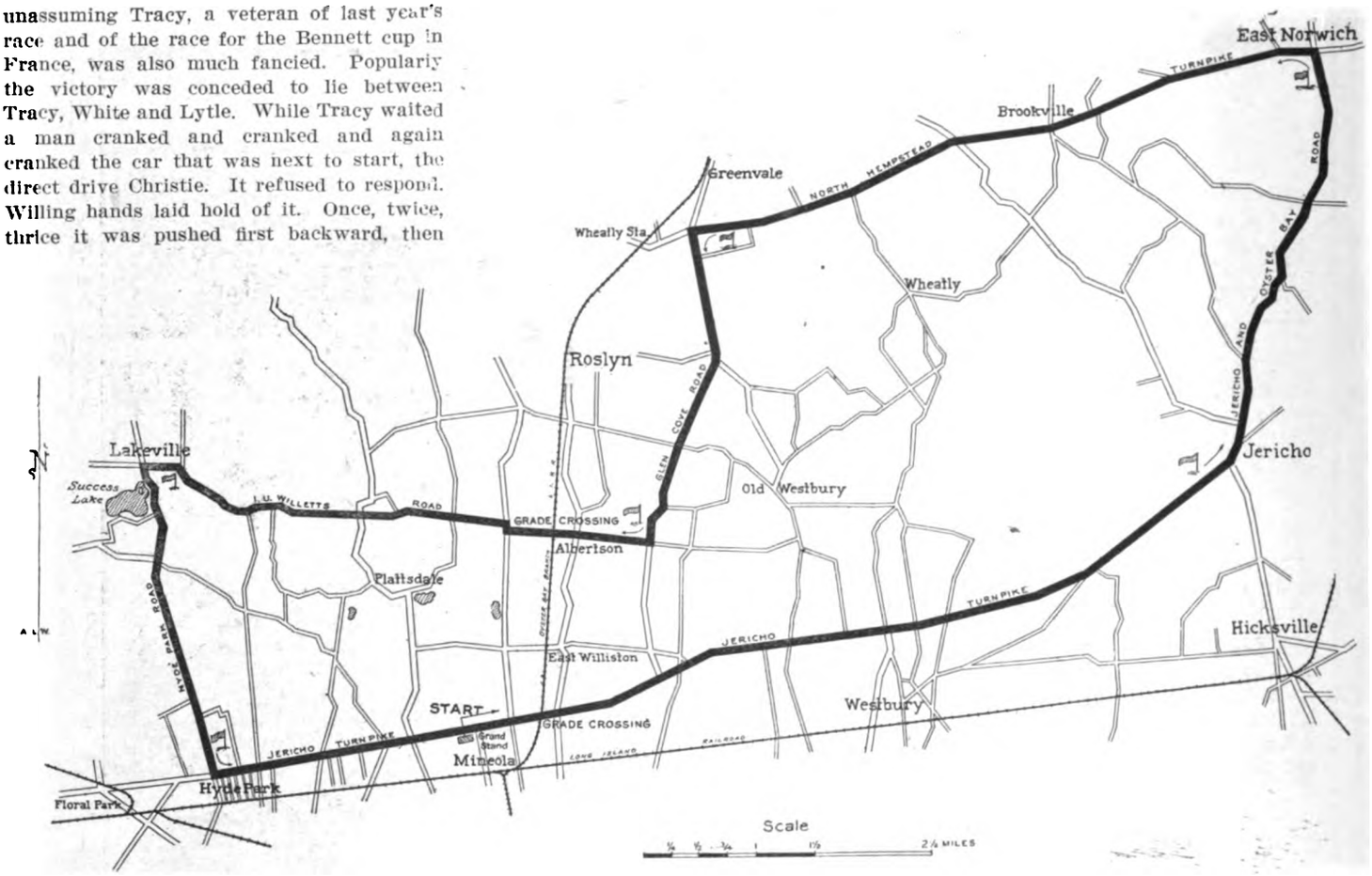
The influence of the remark swept the crowd. It buzzed with quickened interest, then quieted, while necks were craned and constables "got busy."

"Four minutes!" came from the starter; then "Three minutes!" "Two minutes!" "One minute!" Then the seconds were counted in tens to ten seconds. "Five, four, three, two one!" Then "Go!" was fairly shrieked into Nutt's ear. He went with a roar of explosive energy and a great puff of smoke from his heaven pointed exhaust.

Ten times did the starter repeat these words. Dingley, looking like a night gowned monk, was the next to hear them; then were they tolled off to Mongini, the one foreign driver in the race. Walter White, soft skinned and never more truly named, in his low shoe shaped craft of white went next—or perhaps "went" is not the best word. The day before he and his car had had a nasty spill in trying the course. Some damage had been done, but it had been repaired; it was not an auspicious prelude for the man and the car on which high hopes had been set. White heard the "Go!" An instant before a Motor World man had glanced at his steam dial; the hand was dancing at the extreme pressure, 1,200 pounds. When at the word this tremendous force was applied something went. It was not the car. There came a plume of white smoke, a dull thud, and the great white shoe simply coasted away from the line. It stopped a hundred yards beyond and was instantly surrounded by a curious crowd. The toggle joint of the universal shaft had broken. It was a bitter portion. But the crowd had no eyes for the unfortunate. Tracy, with his thundering Locomobile, was on the line belching blue fire. The

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unassuming Tracy, a veteran of last year's race and of the race for the Bennett cup in France, was also much fancied. Popularity the victory was conceded to lie between Tracy, White and Lytle. While Tracy waited a man cranked and cranked and again cranked the car that was next to start, the direct drive Christie. It refused to respond. Willing hands laid hold of it. Once, twice, thrice it was pushed first backward, then



OFFICIAL MAP OF THE COURSE.

forward, while Driver Robertson performed some deft manipulations. Then of a sudden it volleyed like a battery of great guns, the roar mingling with that of the swiftly departing Locomobile, the white handkerchief that plumelike floated from the driver's skull cap discernable through the smoke. The Royal, the elongated Thomas, the high built, buckboardish Franklin (each in order) got off without incident. Only Lytle, another veteran and another prime favorite, remained. What were his thoughts? The question was quickly answered.

LYTLE GETS HIS GUM.

"Gum? Gum? Who has any gum?"

It was the alert Pardington, assistant referee by title, almost referee in fact, who spoke. There was no response.

"Gum? Gum? Mr. Lytle wants gum," he repeated through the short megaphone he carried and directing it in several directions.

Several hands dived in several pockets. One of them fished out a packet of the chewing material, and Lytle was made happy. A moment later the little man in the big car heard "Go!" yelled into his ear. For a brief moment his car refused to budge. He had not released the brake. Another moment and he was off. The struggle was fairly on.

At eleven points on the course telephones had been placed, each connecting directly with a 'phone at the starting point. The latter 'phones were ranged in a row in the "first story" of the double decked press stand, situated exactly opposite the grandstand. At each 'phone there was an attendant, who kept his car glued to the receiver. There was an official at each of the other telephones on the route, and a lineman with his kit strapped on a motor bicycle ready for instant duty in case of interruption. As was the case during the race last October, this telephone service kept the grandstand and vicinity well informed of all that was occurring. The information that came over the wires was promptly shared with the public. The official announcer repeated all messages through his megaphone.

"No. 1 (Nutt) passed Jericho at 5:37," was his first announcement.

"No. 2 burst his tire at Jericho," which came a few minutes later, caused the first ripple. It marked the undoing of the unfortunate Christie car, and also, remarkable to relate, the only tire trouble of the race. The Christie driver later telephoned for permission to change a wheel, and the permission was granted with reservations. The change was made, but an hour was lost in doing so and the car, of course, was never a real factor in the contest.

Before he had started the message, "No. 2 passed the Guinea woods at 5:47," conveyed to Lytle—and to the crowd—that his stable mate, Dingley, had passed Nutt and was in the lead—a lead that he never lost save for a few brief seconds on the third round, when Tracy, in point of time, was clocked four seconds to the good.

The message also excited the curiosity of Referee Vanderbilt. When he heard it he approached a man who held a map of the course.

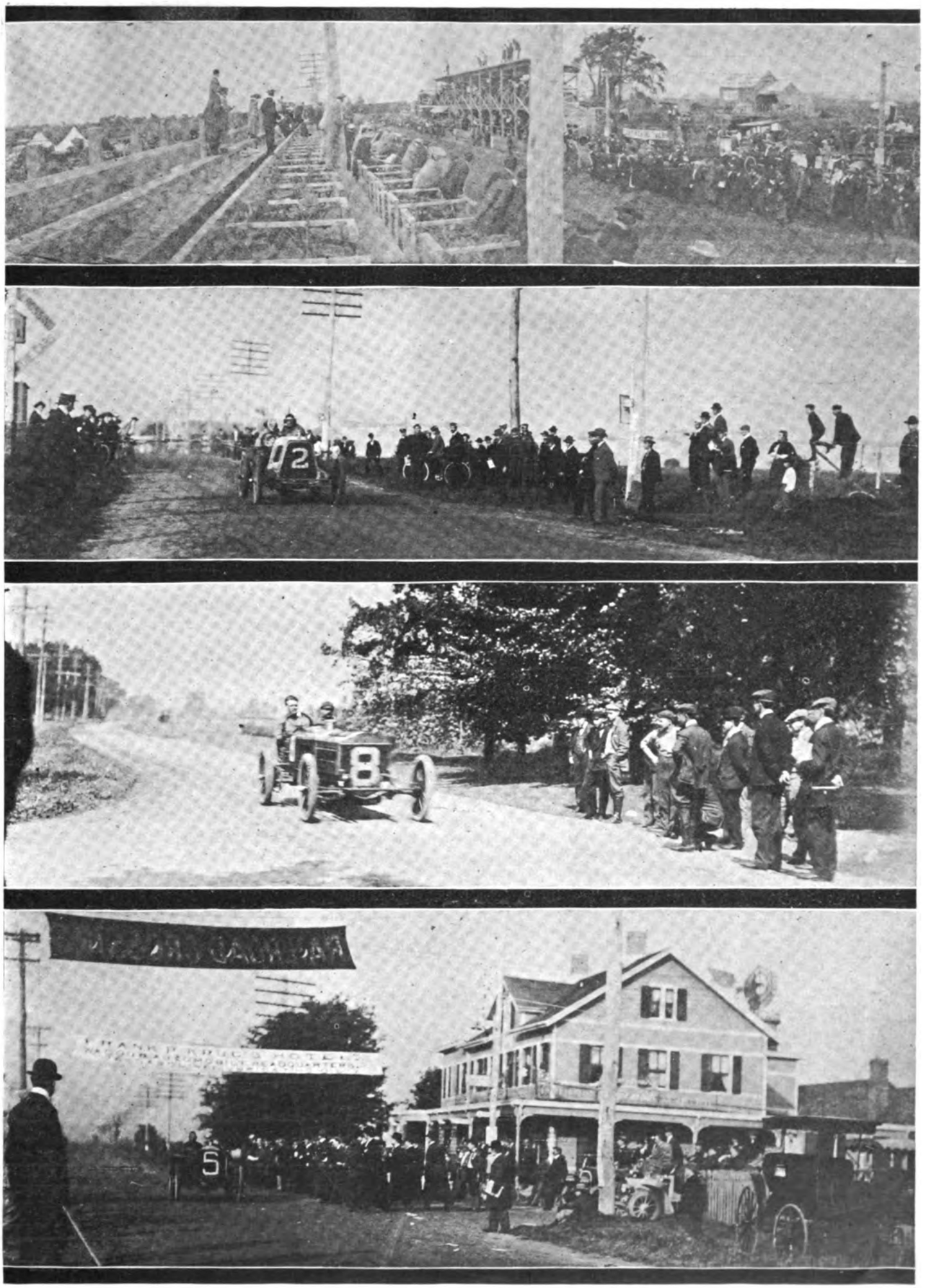
"Where are the Guinea woods?" he inquired, and this depsite the fact that his country estate is little more than five miles removed from them. The location of the woods was pointed out to him.

DINGLEY LEADS ON FIRST ROUND.

Possibly because the well informed Pardington was at his elbow Mr. Vanderbilt was less in the public eye than was the case last October. He mingled less and did not even look so chipper, but he wore the same old black satin smoking jacket with quilted lapels that he wore a year ago, and apparently the same riding breeches and puttees. He shuttled between the telephone booth and the box in the grandstand, in which were seated Mrs. Vanderbilt and a party of her friends. In the adjoining box were Albert L. Pope, whose car Dingley was driving; Arthur Pope, Charles E. Walker, H. A. Lienhardt and other of the Pope officials and lieutenants.

The message from the Guinea woods had quickened their interest, and when the first cry of "Car coming!" reached their ears, and a few moments later the Pope-Toledo, with

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1. "CAR COMING!" 2. DINGLEY ON THE JERICHO PIKE. 3. THE THOMAS "LETS OUT A LINK." 4. TRACY ON THE RAILROAD CROSSING AT MINEOLA.

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the big number "2" painted on its radiator, could be plainly discerned, the smile that followed lit up the surrounding boxes. When Dingley dashed past there was a hearty hurrah. When the megaphone announced 25:58—away inside a mile a minute—as the time A. L. Pope was so unexpressibly happy that he shouted:

"How is that for California?"

Dingley, be it understood, is a Californian.

Men who held stop watches glanced at their pieces again and again, and shook their heads as the announced time dawned on them. Several made their way to the officials, but it was quite a while before the correction was announced. There had been a mistake made of two minutes. The correct time was 27:58—and, notwithstanding, better than sixty miles an hour.

EXPANDING SMILE ON POPE FACES.

With each succeeding message—save one—and each succeeding appearance of Dingley the Pope smile became more expansive until at last faces became too small properly to contain it. The one shadow fell on it when the message came from East Norwich that Lyttle, on the second lap, was down and out with a broken sub-frame. The first story had it that he had run into a tree; but this proved not to be the case. By the irony of fate the mishap occurred when he was moving not at hurricane speed, but at a crawl of not exceeding three miles an hour. He had slowed for oil, and an error of judgment in the manipulation of his clutch had caused the irreparable damage.

If Lytle caused the Pope staff a pang, before he did so he gave the grandstand its first and indeed its only real thrill. It was on what proved his first and last lap. The monotonous cry, "Car coming!" was unexpectedly varied by a cry of "Two cars coming!" And they certainly were coming, the hindermost gaining on the leader at every revolution. They could be seen a mile away. It was a pretty sight, and the crowd fairly throbbed with excitement. As they came nearer it was seen that cherubic Lytle was coming hotfoot after the bearded Jardine. In the twenty-eight miles he had made up the six minutes that had separated them. If Jardine knew that Lytle was so close on his heels he gave no evidence of it. He held the centre of the road. Fifty yards from the grandstand the big Pope-Toledo swung sharply to the left; it cut deeply into the softer going, and the next instant flashed past the Royal, gained the centre of the road and, while the crowd cheered, opened wider the gap with every bound.

The long, red Thomas, with its boyish driver, had passed but a short time, and as it passed it shed fragments of something. E. R. Thomas, of Buffalo, its builder, and H. S. Houpt, its entrant, were there, but if they discerned trouble their faces did not show it—not even when some of the "wise ones" who had picked up the fragments and called out, "His battery box is broken." The car was running well and had made a fast lap, but it made no more of the same kind. The battery box had, indeed, given away, and to even finish the plucky fellows in the car had recourse to carrying the battery in their laps—that is, in the chauffeur's lap. Matters went from bad to worse. The coil also was injured, and the big car simply limped around the last lap. But two of the six cylinders were working, and instead of the deep base note that betokened full vigor there was but a weak irregular sound as of a giant seeking to stifle its sobs at its own helplessness.

E. H. R. Green, the great big, good natured Texan, was there, too, to see his big wheeled, high bodied, eight cylinder Franklin perform. He saw it once, and then it was seen no more. But that once was enough to show that its speed was not sufficient for such a battle. It was moving well, but it lacked the



JOSEPH TRACY.

dash of the others. It cast a shoe, or rather a bolt, on the second round, the bolt penetrated its big stomach—its gasolene tank—and through the big hole its life blood ebbed and then it stopped, not to go again until tied to the tail of a car with a good stomach. For nearly two hours it was lost. The telephone brought no word of it, and after all was over its big owner went scouring the country for trace of it.

SOME EARLY ELIMINATIONS.

The White, a favorite though it was, had been wellnigh forgotten. Not until 6:14, when Jericho reported that it had just passed that point, was it recalled to mind. The toggle joint of a White touring car had been borrowed and a repair effected, but fate was against that car, for it had hardly got into its pace again when its water tank burst. With the water splashing out it sought to live up to its proud reputation, but the last hurt was fatal, and it crawled silently past the grandstand and became an elimination.

One car alone was not seen after it left with its flourishing roar—the Matheson, driven by Mongini. Some ten miles away its extemporized lubricating system failed of its purpose. The piston "seized" and it drew to the side of the road, to be numbered with the "also rans."

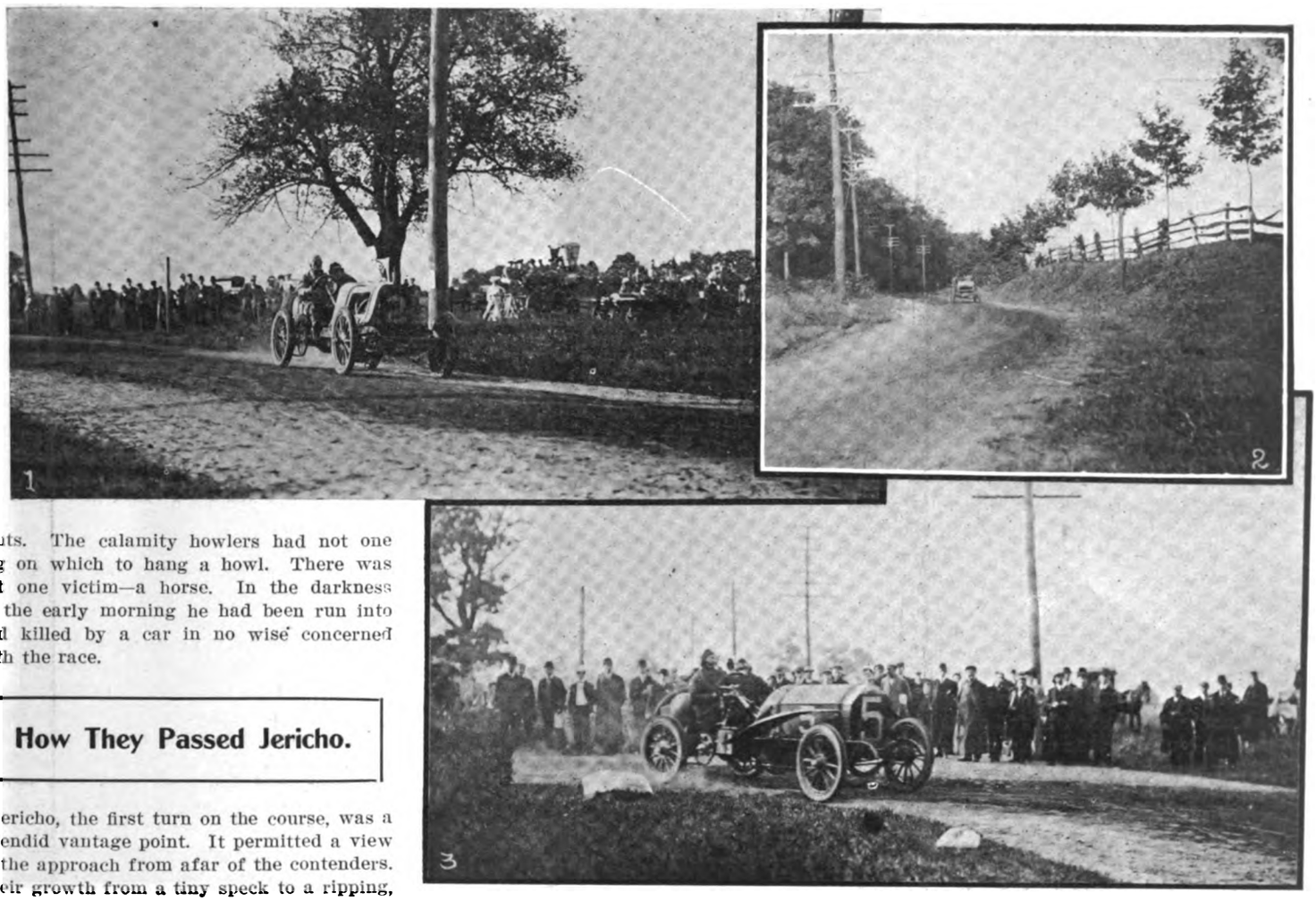
The second lap was the eliminating one. It was on that round that White, Lytle and Winchester went down and out, and though he came around long after, Robertson, in the Christie, might well have been out. He certainly was out of the reckoning. These four cars were all special creations built for this event. When account was taken of the survivors there was cause for amazement. Five cars remained—one, the Thomas, also a special racer, had been wounded and was limping, and of the other four, two were stock cars, the Haynes and the Royal—stock cars tuned to concert pitch, it is true, but stock cars, nevertheless. They were standing the gaff bravely, and it was plain would do what none would have dared prophesy—they were practically assured of third and fourth places. When the fact dawned on the thinking men it proved more than awakening—it was a revelation. Come what may in the big race of October 14, the American stock car was doing itself uncommonly proud.

TRACY'S HOT PURSUIT OF DINGLEY.

Dingley wore a broad grin and waved a hand gayly when he passed on the third lap. He had no cause for great concern. He had reason to feel chipper. He was in front and none had passed him. He might have felt a mite less larky in less than three minutes had he heard what the grandstand heard through the megaphone, just after Tracy flew by, i. e., that the man in the big Locomobile had gained four seconds on him. Dingley had had a bad minute or two on that third lap, but he made amends for it in the next and last one. He ran like a scared deer, and though Tracy also quickened his running Dingley regained those four seconds and fifty-nine others for "good measure." While the crowd cheered lustily and the Pope smiles in the grandstand reached behind the ears, the man from California dashed over the line the victor in a good race well run. He was acclaimed as a victor, though it was not until two minutes later that it was known that the victor's plume really belonged to him. Those two minutes were tense minutes. They ticked off slowly. Would Tracy come? He did come, and in dashing style. When as sixty seconds lengthened to one hundred and no speck or sound betokened his coming down the long straight road, in which direction all eyes were strained, it was seen that first place was not for him and feelings then relaxed. It was 2 minutes and 59 seconds after Dingley had crossed that Tracy came. He was cheered heartily, as he deserved to be cheered. He had driven as he had been ordered to drive—with caution, not too fast, not too slow, but fast enough to qualify. He did that very thing. There were cheers, too, for Jardine and for Nutt, and no men merited them more warmly. They had done what appeared impossible.

Then the crowd broke for home, and, as one of the natives expressed it, the travel on the roads became more dangerous than while the race was on. But there were no acci-

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1. DINGLEY AFTER ROUNDING THE "S" TURN NEAR ALBERTSON.
2. NUTT ON THE APPROACH TO LAKEVILLE.
3. TRACY SKILLFULLY NEGOTIATING THE "S" CURVE.

dents. The calamity howlers had not one peg on which to hang a howl. There was but one victim—a horse. In the darkness of the early morning he had been run into and killed by a car in no wise concerned with the race.

How They Passed Jericho.

Jericho, the first turn on the course, was a splendid vantage point. It permitted a view of the approach from afar of the contenders. Their growth from a tiny speck to a ripping, roaring, gigantic motor car could be plainly seen as they dipped now up, now down the gentle grades of the long, straight road. But Jericho was favored as a viewpoint rather because of its right angled turn, which gave promise of "happenings." The cars shot up a short, slight grade, turned abruptly to the left up a steeper grade, and made off toward East Norwich.

Frank Nutt, in the Haynes, was first to reach the point. He made the turn deftly. Dingley a minute later essayed it, and gave the little crowd a chill. He skids frightfully, and the wonder is that he does not upset. But he is away before thoughts have time to collect themselves. After Dingley there is a longer wait. Cars No. 3 and No. 4—the Matheson and the White—are already missing, and no news comes of the reason why. But Tracy—No. 5—he comes in dashing style, sweeps 'round the turn like a giant bird, and so prettily that there is a mild burst of praise. Next comes that Christie car, its forward wheels bounding from the road like a rubber ball. Watches show that it has gained on Tracy. The next instant, like a wounded beast, it staggers from side to side, limps off slowly, and then stops.

At Jericho, the turnpike forms a Y, one arm branches off to East Norwich, the other to Hicksville. In the triangle formed by the Y is a small grass plot, a tree and a post. To the onlookers, it appeared as if the driver of the Christie was suddenly seized with an attack of "rattles." He swerved dangerously toward the grass plot, ran over an iron pipe, narrowly missed the post, and while a shower of dirt was thrown over the spectators, he skidded fearfully around the uphill turn, almost crashed into a telegraph pole, and then straightened out. Its front tires had been literally torn from the rims. The car ambled down the road a short distance to a tire control and there it stopped. There followed some telephonic talk with the grandstand, and about an hour afterward the car restarted. When it came around again, the crowd scampered for cover. It arrived a third time about 8:20, when the race was over, and efforts were made to intercept it, but the driver seemed deaf to all shouts and blind to all signals.

On his second appearance, Dingley skidded worse than the first time, and came near to going to wreck against a telegraph pole. The others made the turn without incident. The Franklin took the curve very slowly, as did the belated White, when it finally arrived. Though they stepped off lively enough, both drivers appeared imbued with the it-is-better-to-be-sure-than-to-be-sorry spirit.

East Norwich and its Angle.

At East Norwich, which as far as the course itself is concerned consists of a right angled bend in the road, with the village postoffice for a turning point and a quarter-mile stretch of elm-shaded street, broad and picturesque in its setting of painted wooden houses, an even hundred people had foregathered when the official at the telephone announced that the race had commenced.

At 5:40 came the first cry, "Car coming!" and the next instant, from over the brow of the long grade on the Jericho and Oyster Bay road, there came into view a flying speck of black, which took shape like the image on a screen, and with wondrous haste assumed the form of a car in full flight. There was heard the roar of an open exhaust, and the crowd pressed forward, only to be crowded back by the police, threatening, cajoling, urging as the thing came on. "Number Two!" was the cry, and sure enough, it was the Pope-Toledo, with Dingley at the wheel. Already had he passed Nutt, "the man before." Sixty or seventy feet from the turn he cut out his motor and

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coasted up, making a slight outward swing, and then, with a straight shot, cut the inner curb with but a couple of feet to spare, opening up the engine as he straightened out. The gravel laid diagonally outward from the corner gave out a great crunch, there was a shower of fine stones thrown up by the wheels, and he was gone!

The people rushed out to the course to watch the retreating form of the machine, as it swept from view down the street, but were crushed back by the guards as the warning, "Car coming!" swelled forth a second time. More slowly came this car, and seemed about to stop as the turn was reached. No. 1, Frank Nutt in the Haynes, driving with great caution, was sure of making no mistakes at that pace, and well he need be, for he had been over the tortuous course but three times before. At the corner, he was going scarcely faster than eight miles an hour, it seemed, where Dingley had been travelling fully twelve or fourteen. He recovered quickly, though, and slipped out of sight almost as soon as the other had done.

At 5:48 came the big Locomobile, fifth to start, roaring right up to within sixty feet of the corner, and then cutting out with a mighty display of pyrotechnics, as the big engine fired a couple of extra blasts and then quieted down. The turn was made nicely, and not until the car was full on the stretch was the ignition cut in again with a burst of willing energy that made the spectators gasp and "Ah!" in wonderment at the pent-up wrath of the monster.

PANICKY TIMES FOR WOMEN.

Interest was at a high pitch. Two girls at a window over a porch had come down on the roof, and stuck their feet in the gutter to keep from coasting off into a wondrous little bed of flowers in the yard below. They were mightily interested, and conversed in shrill tones with a couple of lads on the sidewalk. A man in brown overalls removed his languid bulk from the tree which had been supporting him since dawn, and disclosed a sign painted crudely on a bit of shingle, which read, "Stoop to let for the Auto Race."

"Car coming!" and with little yips of terror, three girls and two lads who had waadered on the road sought cover in the yard.

It was No. 7—the Royal—this time, cutting close in to the corner and skidding to the grass on the recover, but without other result than a mighty panic on the part of some womenfolk on the sidewalk, who skeddadled out of range with ridiculous celerity. Three minutes later, came the Thomas car, making a fast turn, but skidding slightly on the gravel. In a second more, it seemed, came Lytle, in the big Pope-Toledo, making the fastest turn of all. He drove splendidly, throttling his engine at the corner, but not cutting it out altogether, as had most of the others. Following directly behind him was the only air-cooled car, the long, high-built Franklin sputtering like a masked battery, and smoking like a blast furnace. This car made the slowest turn of all, but sprinted bravely into the stretch, only to slacken an instant later as the ignition failed.

At eleven minutes after six came the smaller of the two Pope cars, on its second round. The crowd gave a murmur of delight as the number was recognized, and drew back of its own accord as the machine bustled up to the turn at a much faster pace than before. The mechanician swung far out on the inside, as the machine slowed perceptibly, and then, as he caught a line on the curb, called "Right!" in sharp assurance as the driver, with hardly an instant's pause, dragged open the throttle and sent the machine whizzing around the corner amid a stinging shower of gravel, which pelted the crowd ten feet or so away.

On its first appearance the "White" machine ran but indifferently. The driver



NOT NIGHT GOWNED MONKS, BUT LYTLE AND HIS CHAUFFEUR.

seemed equally doubtful of the turn and of his car, for he shut off away back on the grade, and wavered perceptibly as he approached the corner, only giving steam as he made the turn. As he straightened out, however, the blower was opened, and the car shot away out of sight with a rapidity that spoke of wonderful accelerative power, and as the wail of the escaping steam rose to a shriek in the distance, of speed capabilities that placed it in the forefront of the fast machines.

Throughout the race the handling of Dingley and Tracy far outshone that of any of the others; the former in dash and vigor, and the latter in caution and supreme confidence. Lytle drove magnificently during the first round, and then, here at East Norwich, he fell miserably through an error in judgment. On the first round he had called out to his supply station for oil, but had not stopped for it. On the second, however, he slowed down, evidently with the intention of coming to a full stop, but as he swung to the side of the course, the attendant handed up a can of oil before the machine had come to rest, and Lytle—fatal error—let in the clutch without changing gear. There was a groan of strained metal for an instant, and then a crash as the universal joint gave way, and the car was out of the game.

Presently those at the corner were treated to a sight of a very little man clad all in leather, who wore an exceedingly worried air and asked for the use of the 'phone. After a moment's delay, a connection was made and the little man was heard calling for "Mr. Keating."

"Mr. Keating," he said, "this is Lytle. I—I've broken my sub-frame. Yes, I'm out of it."

And with something like a groan he hung up the receiver and turned away. Pursued and questioned by two or three newspaper men, he was silent at first, but on being asked directly what had been the cause of the accident, he said simply, "Too much power," and turned away. Later, as he was leaning against a fence and sadly contemplating the result of a moment's excitement, he remarked in wonderment, as if he hardly could comprehend the cause, "Who would have thought that would have happened?"

On inspection, the car was seen to be badly injured. The universal joint in the driving shaft, between the engine and transmission, was broken, both members being minus one of the jaws. The crank-case was split open on the right hand side as far as the second cylinder, and the gear case was cracked across the top, showing the gears within. The side members of the frame were sagging fully two inches at the centre, and this allowed the rear portion of the engine to settle toward the road. The pedal control shaft was adrift at the outer end, and sagging badly.

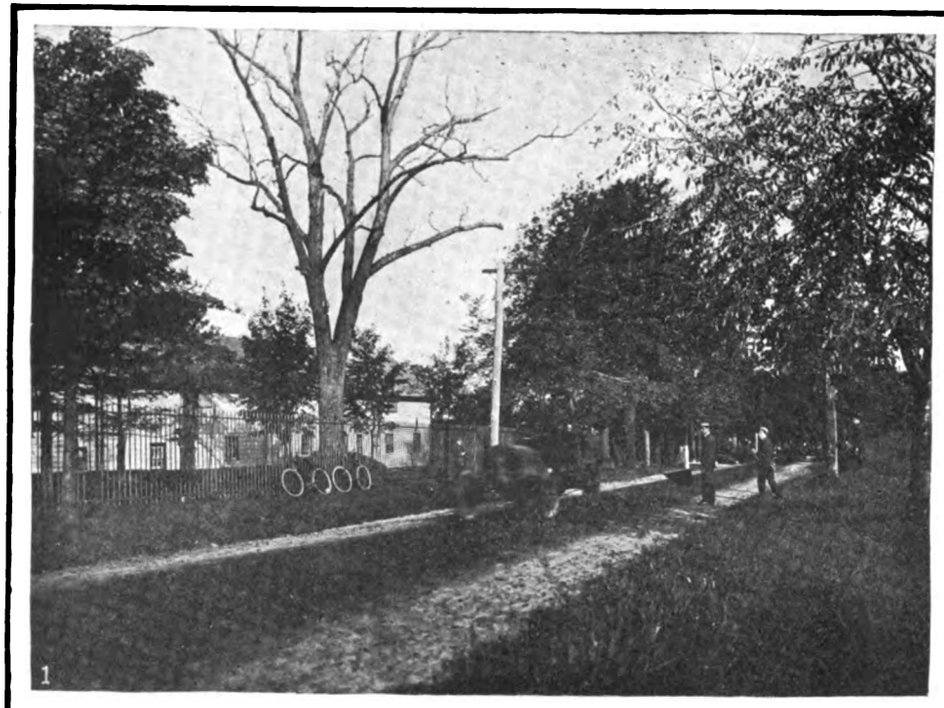
LYTLE'S CHAUFFEUR GROWS ABUSIVE.

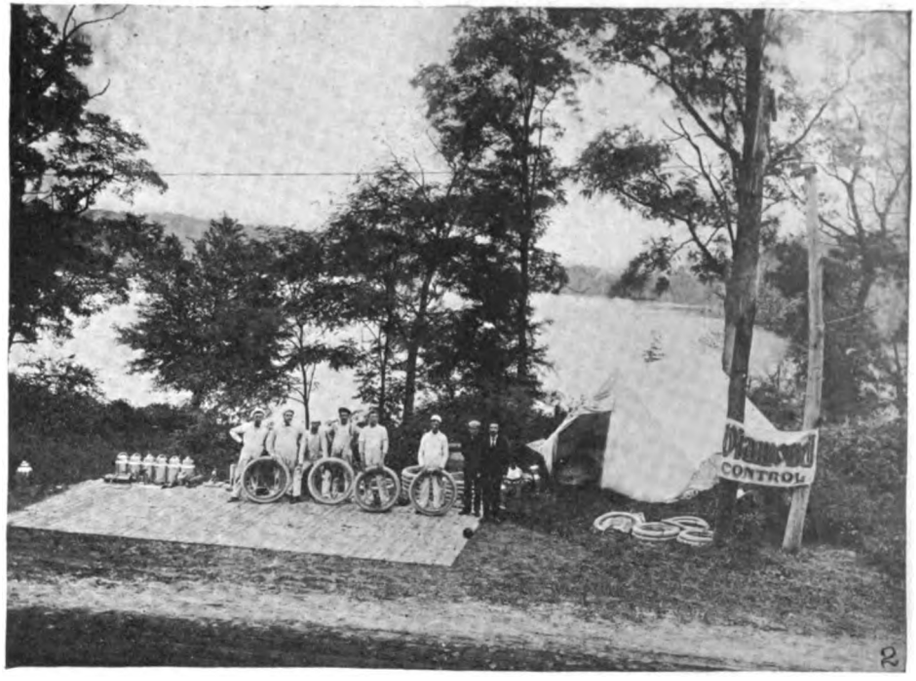
As Lytle returned from the telephone his mechanic, who had a moment before been blubbering out his chagrin to the tire men in a nearby tent, rushed up to him and assailed him with all manner of stinging reproaches.

"You're a —— of a fellow to be put in charge of a car. You're not fit to drive a runabout." This and very much more did the chauffeur spit out to relieve himself of the ungracious spleen of an underling whose champion has lost. Lytle bore the abuse without remonstrance. He accepted it in silence as if no word of it reached his ears.

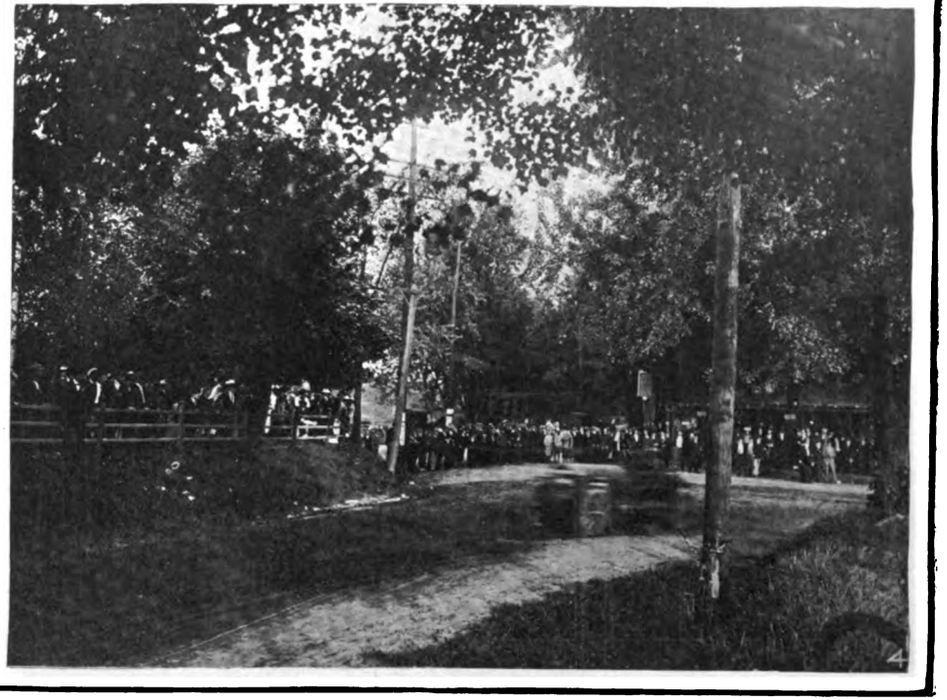
Thereafter, the time dragged till the finish. Some little interest was aroused when, at 7:10, just before Dingley appeared on his fourth round, the Christie car made its first appearance. The speed was but indifferent at the turn, and the engine was skipping slightly as the machine rounded into the stretch and accelerated. Moreover, the front end, weighted down by the concentrated load of the engine, was pounding badly at every bump in the course, and made the car seem ill-balanced. Dingley was received with a round of cheers as he passed his stalled and disabled stablemate for the last time, and

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1. PASSING THE VANDERBILT ESTATE.
2. THE DIAMOND TIRE CONTROL NEAR LAKE SUCCESS, LAKEVILLE.
3. THE GOODRICH CONTROL AT LAKEVILLE.
4. THE "HAIRPIN TURN" AT LAKEVILLE.

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the two men riding to victory waved a reply as they rushed down the slight decline at that point. The mechanician was pumping oil vigorously, and the engine worked so smoothly that none could doubt the car would win.

At 7:15 the familiar cry was raised again, but this time no car swung into sight around the turn. Instead, came a wan little fox terrier, running wild in doggish terror, with stubby little tail hugged tight as if urging his hindermost parts to equal exertion with the two little front feet, which pattered so briskly on the hard oiled surface of the road. From either side came catcalls and howls, while now and then a bit of a stone would skip along in his wake, carrying a new fear to the canine heart. As he disappeared around the bend below the tire camp, more calls were heard, and a big negro boy standing by cried, "Ma Gawd, he done runnin' yit!"

About the time the news was heard that the Franklin had turned off the course for the last time, the Royal passed on its fourth round, with the cap missing from the radiator top, and a cloud of steam floating back into the driver's bearded face. The radiator showed a bad dent, too, but it was not known until some time later just what had been the cause. On the previous lap Jardine, in negotiating the ticklish double S curve near Albertson, had spilled. As his car fell on its side, he and his chauffeur were thrown out, but quickly realizing that no serious injury had been done, the car was righted, and in less than three minutes the plucky fellows were under way again. Car No. 8, on its last round, was barely creeping along on two cylinders, aided spasmodically by one or two more, when it came to the turn. The recover into the stretch was made badly, with the result of a skid to the grass, but the speed was not great enough to cause damage. At 7:40 came the Christie once more, lazily drawing up to the turning point and coasting until the stretch had been made. Then it accelerated slowly, the clutch wailing pitifully the whole.

TOY CAR CAUSES COMMOTION.

Fifteen minutes later, a little toy car crept out into the road from some hiding place or other, and began to meander along, evidently in the direction of home. Unfortunately for the intentions of the driver, however, something went amiss, and the contraption came to a halt after a couple of erratic spasms which convulsed the bystanders. "Car coming!" cried a wicked one, and thereupon the driver jumped down and began to labor to shove it off the course. He was a tall, anaemic looking individual, clad in pale trousers distinguished by their length of leg, and a cute little black cutaway coat, which reminded one of Sunday and the collection box. Aided by several of the kindhearted ones, he at length succeeded in getting his little "ship" out of harm's way, and then, taking from under the front seat a formidable crank fully two feet in length, began to labor with the disorganized vitals of the thing. Six or seven turns of the crank, given with great vigor, brought forth unexpected results in the shape of a snappy backkick which kept the flywheel turning for several seconds.

Meanwhile his women folk, two in number, not counting a little girl, were scrambling out in panic stricken haste, with many ejaculations of "Mercy me!" and the like. Gaining the sidewalk, they congratulated themselves on their narrow escape from a horrible death, and were still much perturbed when the wee little cylinder once more began to chug forth its merry note. They all had piled in and started off amid a most marvellous howling of the gears, when there came from the direction of the telephone the news that the race was off, and that the last car had passed.

At Lakeville's Mean Turns.

At Lakeville, where because of two mean turns it was thought there would be "something doing," disappointment was the lot of the watchers for the significant "something." Excepting a few bad skids, which for the time being appeared dangerous, nothing of moment occurred. The Diamond and Goodrich tire controls were there, but the men had nothing to do but "look pretty." The Goodrich tent was pitched in the field opposite the Vanderbilt country house, and the Diamond camp was further down the road on the bank of Success Lake. The Diamond men did "look pretty," too. All were attired in white duck suits, and, though tires and supplies were stacked on the platform in front of the tent, for instant use, they were unnecessary.

Lakeville was, perhaps, one of the most interesting points on the course. A mile or so below the crossroads the road was particularly crooked, and great possibilities seemed to lurk. The oil and rain of Thursday night had made the surface somewhat slippery, and none of the drivers took chances—all seeming content to cover this part of the course at slow speed. Further on the road formed the first bend of the so-called "hairpin curve." This curve was banked—a rather wise precaution—for, had the drivers attempted to negotiate it at full speed, they and their cars would have gone off at a tangent over the bluff and would doubtless have been dashed to eternity in the woods below. From the first curve to the crossroads at Lakeville the road was practically straight. Here the course turned at right angles to the left, and, continuing, described a wide sweeping curve around Success Lake at the Vanderbilt farm, and thence straight on to Hyde Park, when it again bore to the left toward Mineola.

Quite a crowd collected at the crossroads, and it was early made evident that the White and Locomobile cars ,with White and Tracy, were favorites with the Lakeville contingent. Their camps were established in this vicinity. At the crossroads the course was roped off, and the special officers had no trouble in keeping the several hundred spectators back of the lines.

The cry, "Here comes the Haynes, No. 1," shouted by an official with a megaphone, was the first signal that the watchers and waiters had that the race was on.

The cry went up again, and the spectators pressed closer to the guard ropes that held them off the course. And "she" certainly did cover the straight road which led up to the turn in an amazingly short length of time, but "she" did not happen to be the Haynes. "No. 2" was painted on her radiator, and a hurried glance at the programme showed that "No. 2" was the 50 horsepower Pope-Toledo, with Bert Dingley at the wheel. Dingley took the right angled turn in fine style, grasped the lever on the side of his car, threw it into high speed, and before one could say "Jack Robinson" was lost to sight in the distance. It was then lacking ten minutes of 6 o'clock.

Just five minutes later Frank Nutt, in the Haynes car, appeared. Nutt was plainly nervous. He did not turn soon enough, and attempted to take the sharp curve at full speed, and the little car slewed over to the right side of the road, while the right wheels went up the bank. The crowd held its breath in suspense, but Nutt was soon on the level again and away up the road. Joseph Tracy, in the 90 horsepower Locomobile, was the next, and the big car skidded very little as he rounded the curve. The crowd recognized the intrepid "Loco" man, for they yelled "Tracy!" "Tracy!" The driver acknowledged the acclamation by smiling and nodding his head.

"WHERE IS THE WHITE?"

"Where is the White steamer?" somebody anxiously cried, and immediately the entire crowd was aroused. The steam car was scheduled to start before the Locomobile, and the latter had reached Lakeville first. There must have been an accident. The man who had charge of the telephone booth had been resting on the hotel porch and watching the cars go by, the unobserved of all observers. Now, however, he was the most important personage at the turn. He rushed to the telephone.

"Hello!"

"————————"

"Where is the White steamer?"

"————————"

"Has it met with an accident?"

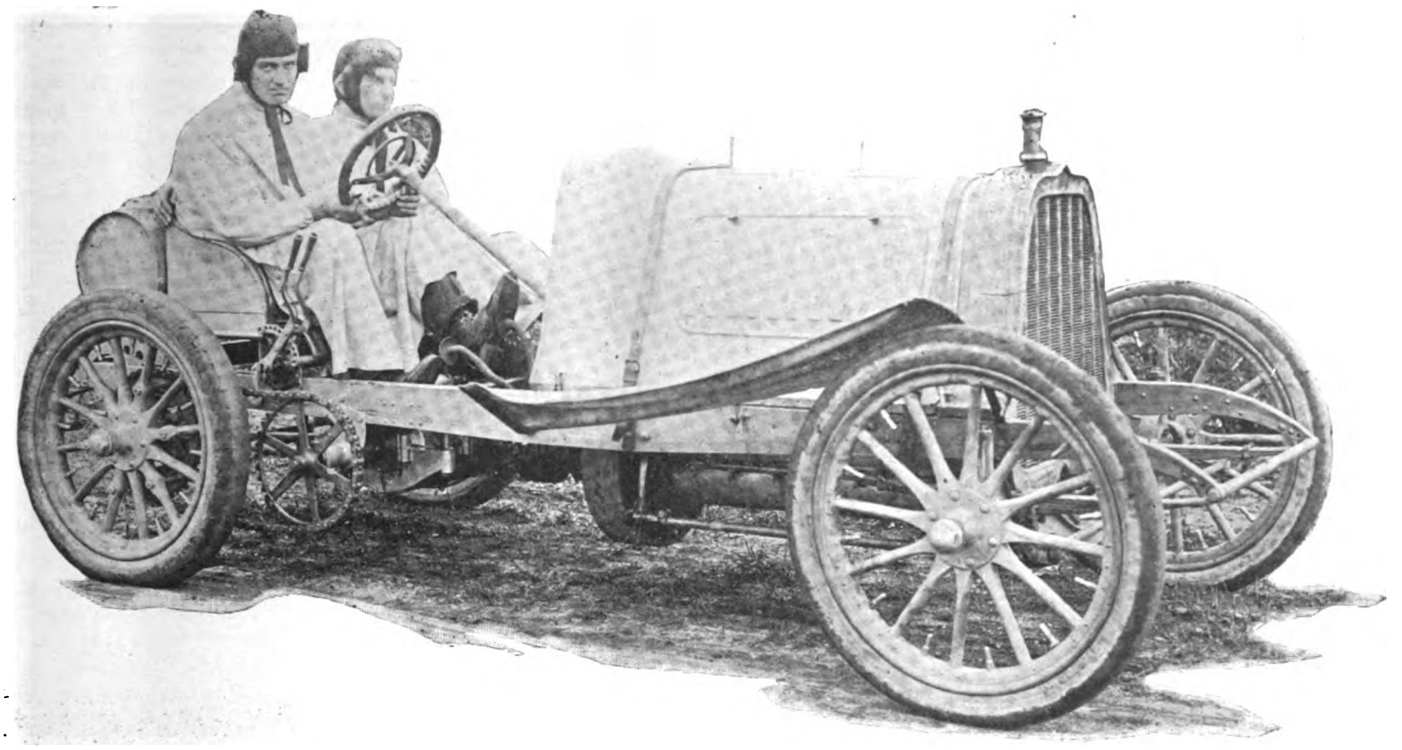
"————————"

The crowd pressed closer to hear the one-sided conversation.

"You don't know?"

With a mingled sigh of regret and disappointment the crowd melted away. No one knew what had become of the favorite, and the telephone man hung up the receiver. As "No. 8," the new 60 horsepower Thomas, driven by Montague Roberts, the youngest chauffeur in the race, arrived next, the spectators felt sure that an accident had put Walter White in the steam car out of the

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DINGLEY AND THE TRIUMPHANT POPE-TOLEDO.

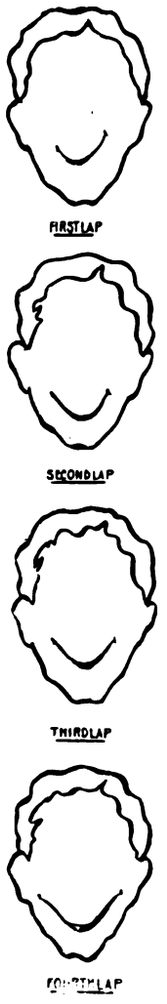
running. Roberts handled his car well, and negotiated the turn in clever style. It was then 6:05 a. m.

Two minutes later the crowd had another mild attack of heart trouble. Robert Jardine, at the wheel of the Royal, tried the trick Nutt had tried—that of taking the turn without shutting off power. That he did not come to grief was due to a kind Providence and his own nerve. The car slewed around and ran up the bank, missing a telegraph pole by only a few inches. Jardine's face was deathly pale, but he kept a cool head and followed his predecessors toward Hyde Park. Only ten seconds elapsed before the big Pope-Toledo, driven by "Midget" Herbert Lytle, came thundering up the road. The car was running beautifully, and Lytle took the curve easily.

Two little girls, who had been standing on the steps, apparently daughters of the proprietor of the corner hotel, went inside and started a hymn, accompanied by a squeaky melodeon. Only two or three strains of "He leadeth me" were wafted through the parlor window, when a cloud of dense blue smoke was noticed down the road.

Here comes a car afire," remarked some one, as a cloud of smoke was s n approaching. Immediately the remark was repeated, but when the smoke took form it proved to be the eight-cylinder Franklin, and it certainly was sputtering and smoking like a furnace. Indeed, the eight cylinders, placed tandem, with dense clouds of smoke pouring from each, gave the car an unnatural appearance. It was missing badly.

"Why do they have so many cylinders?" asked the Seekerforinformation of an apparently intelligent automobilist standing near a car parked by the roadside.



THE POPE SMILE.

"Why, you see, it is an air cooled car, and the driver uses the first four cylinders until they get hot, and then he shuts them off and uses the rear four. By doing this the cylinders do not get hot all at once, and so he is able to run well all the time."

One thing is certain. Winchester never appeared in Lakeville again with the Franklin car during the race. After the race a touring car dashed up to the Diamond tire control above Lakeville, and in it reposed the corpulent, albeit jovial, Texas colonel—E. H. R. Green—who owns the Franklin. He really looked worried, something unusual, by the way.

"Have any of you boys seen my Franklin car?" he inquired. "I have been all around the course, but I'll be doggoned if I can discover hide nor hair of it." Not a soul knew the sad fate of the Syracuse car.

At 6:21 a. m. Dingley, in the smaller Pope-Toledo, again came around. A glance at the watches showed that he was holding his own splendidly. He was driving a consistent race, and when he turned at Lakeville the spectators cheered lustily. Then followed the Locomobile, ten minutes later, it, too, on its second lap. Still no sign of the White. The crowd did not have long to wait, however, for at 6:33 the big steam car crawled up the oiled stretch and limped around the turn, going less than ten miles an hour. Water splashed from its tanks in front, and the watchers realized full well that an accident of some kind had befallen it, for the "Pride of them all" seemed, so to speak, on its last legs. The average racegoer is, to a high degree, extremely sympathetic, and, although the White car was virtually out of the running, its driver, Walter White, was given an ovation that must have caused his

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"FILLING UP." JARDINE AFTER WEIGHING IN THE ROYAL. WEIGHERS KIMBALL AND RIKER.

SPECIFICATIONS OF CARS.

No.	Make.	H.P.	Engine Type.	Engine No. Cyls.	Engine Position.	Transmission Type Gears.	Transmission Drive.	Transmission No. speeds.	Wheel base.	Wheel Tread.	Tires Make.	Tires Size Front.	Tires Size Rear.	Wgt. pounds.	Tank cap. gas.	Tank cap. water.
2.	Pope-Toledo	50	Gasolene	4	Longitudinal	Sliding	Chain	3 and rev.	100	54	Diamond	34x3½	34x4½	2,198	18	6
5.	Locomobile	90	Gasolene	4	Longitudinal	Sliding	Chain	3 and rev.	109	54	Diamond	34x3½	34x4½	2,196	37	9½
7.	Royal	38	Gasolene	4	Longitudinal	Sliding	Shaft	3 and rev.	110	56	Diamond	34x4½	34x4½	2,190	40	6
1.	Haynes	50	Gasolene	4	Longitudinal	Sliding	Shaft	3 and rev.	106	56	Diamond	34x4	34x4½	2,198	28	6
8.	Thomas	60	Gasolene	6	Longitudinal	Sliding	Chain	2 and rev.	122	56	Goodrich	32x3½	32x4	2,180	30	7
6.	Christie	60	Gasolene	4	Transverse	Sliding	Gear	2 and rev.	96	57½	Goodrich	32x4	32x4	2,000	18	12
12.	Pope-Toledo	75	Gasolene	6	Longitudinal	Sliding	Chain	3 and rev.	103	54	Diamond	32x3½	32x4	2,204	30	6
9.	Franklin	60	Gasolene	8	Longitudinal	Sliding	Shaft	2 and rev.	128	56	Diamond	36x3½	36x4	2,182	26	0
4.	White	40	Steam	2	Longitudinal	—	Shaft	1 and rev.	111	52	Diamond	30x3½	30x4½	2,184	30	30
3.	Matheson	40	Gasolene	4	Longitudinal	Special	Chain	3 and rev.	108	58	Diamond	.....	.....	2,188	12	6

heart to warm, notwithstanding he was beset with difficulties. A sad smile flitted across his countenance.

One minute later Nutt's car, the Haynes, was sighted, and it was followed by the Royal Tourist and the Thomas. All were running smoothly.

When, at a few minutes before 7, Dingley reached Lakeville, thrice around, everybody knew that, barring unforeseen accidents, the little Pope-Toledo would score a victory. The Thomas, Haynes, Royal and Christie cars followed at intervals of about six minutes. It was the first circuit for the last named, the direct drive car, but at Lakeville it was exploding regularly.

At 7:25 Dingley, in the Pope, reached the Lakeville deviation on his last lap, and a cheer went up from the multitude. When the Thomas car reached Lakevile in the last lap it was running on two cylinders, and it could be plainly seen that Roberts was having his troubles. His mechanician was holding the battery box in his hands, while the driver himself was steering with one hand and tinkering with the engine with the other.

About a mile and a half below Lakeville, where the course takes a serpentine reverse crook through a deep cut, a rather amusing incident happened. Just where the road cuts through a hill a small byroad joins the pike. On the top of the fifteen-foot bank which guards the course, and at the very point made by the junction of the branch road, stands a well developed locust tree. To this came a photographer when the race was half run, looking for a vantage point from which to snap the passing contestants. Being of an original turn of mind, he was in search of a unique point of view, in order that his pictures might bear the stamp of his genius. Therefore the tree was just to his liking. Accordingly, by dint of much scrambling, and notwithstanding many pricks from the



THE ONLY VICTIM.

protesting thorns, he shinned up the trunk, with the carrying strap of the camera firmly gripped in his teeth. With infinite pains, and not without one or two narrow escapes from a fall this worthy at length reached the stout limbs half way up the tree. Balancing himself with great care upon his swinging perch, he poised his picture box for a shot as the approaching roar of a car was heard coming up fast. And then, just as the car swung into view with a swish and a roar, the limb broke, and in less time than it takes to tell it the terror stricken man lay prone on the ground, with his head and shoulders projecting over the edge of the bank, more scared than hurt and more scratched than bruised. What his thought were when the car flashed by underneath him and he nearly ready to fall down on it he never told. The oily smoke wafted up to his nostrils no doubt gave him a grim foresight of the hereafter.

City Can't Stop Track Racing.

Replying to the councilmanic resolution requesting the preparation of an ordinance to stop automobile racing on circular tracks, City Solicitor Baker of Cleveland, Ohio, has formally decided that the City Council has no power. He says the council can only regulate automobiles on public streets.

Where Travel is a Delight.

Many men of many minds are all agreed upon one point: The service of The Lake Shore Railway is as near perfection as it is possible for brains and money to produce. Safety, comfort and speed are the keynotes of the road, and safety, comfort and speed have been attained to a degree never before reached in all the history of railroading. Wise travelers know this to be so and take particular care that their tickets read "Via the Lake Shore."

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HENRY'S CAR TURNS TURTLE

One Accident Mars New Jersey Racemeet—Good Attendance and Good Contests.

Success from a competitive standpoint marked the second annual race meet of the New Jersey Automobile and Motor Club, of Newark, N. J., at the Waverly track last Saturday afternoon. Delightful autumn weather, clear and cool, made it perfectly pleasant, and a large crowd turned out to witness the sport.

The only occurrence to mar the pleasure of the meet was the accident that happened at the start of the second event. Chester C. Henry, City Clerk of Summit, was pinned beneath his car, which turned turtle, and he was severely injured. The mishap occurred when the contestants were getting under way in the five-mile race for members only. Henry was driving a new Cadillac, and he came up the stretch with the other contestants, when the signal was given for a restart. The other drivers turned around, but Henry elected to go around the track. Entering the backstretch, he threw on full speed, and his car swerved and turned completely over. The driver had no chance to escape, and was pinned down underneath the machine. Dr. James R. English, the president of the club, attended the injured man, and found that he had sustained a broken nose and three fractured ribs, besides injuring his spine.

It is not known just exactly how the accident happened, but it is thought that one of the front tires became loose or went flat. The car was badly wrecked. Bernard M. Shanley's 40-45-horsepower Mercedes crossed the tape first in the five-mile event for members. H. C. Hennit, 12 horsepower Franklin, was second. Time, 8:03¾.

J. W. Ward, driving a 22 horsepower Buick, scored a decisive victory over S. D. Atkinson, in a Franklin, in the five-mile event for cars from 10 to 20 horsepower. Time, 7:58. Two Pope-Hartford cars lined up for the three-mile race for single cylinder machines, and it went to C. S. Howard in 5:47½.

B. M. Shanley's Mercedes won the ten-mile free-for-all, and S. D. Atkinson, in a Franklin, was second. Time, 15:26½. A 22 horsepower Jackson, driven by Charles W. Cathout, finished first in the five-mile event for regularly equipped touring cars carrying four passengers. Dr. James B. English, 24 horsepower Winton, was second. Time, 9:00¼. With one minute handicap, J. W. Wilkinson, driving a 10 horsepower Autocar, crossed the tape first in the three-mile handicap, with H. Belden, 19 horsepower Ford (9:45) second. H. J. Koehler, in a 22 horsepower Buick, started from scratch and scored third. Time, 4:17. The summaries:

Five miles, open, for motorcycles—P. H. Johnson, 1¾ h. p. Indian, first; Aaron Reid, second. Time, 7:19.

Five miles, for members only—B. M. Shanley, 40-45 h. p. Mercedes, first; H. C. Hennit, 12 h. p. Franklin, second. Time, 8:03¾.

Five miles, for cars from 10 to 20 horsepower—J. W. Ward, 22 h. p. Buick, first; S. D. Atkinson, 12 h. p. Franklin, second. Time, 7:58.

Three miles for single cylinder cars—C. S. Howard, 10 h. p. Pope-Hartford, first; George Robison, 10 h. p. Pope-Hartford, second. Time, 5:47½.

Ten miles, free-for-all—E. H. Fredericks, 40-45 h. p. Mercedes, first; S. D. Atkinson, 12 h. p. Franklin, second. Time, 15:26½.

Five miles, for touring cars, regularly equipped, carrying four passengers—Charles W. Cathout, 22 h. p. Jackson, first; Dr. James R. English, 24 h. p. Winton, second. Time, 9:00¼.

Three miles, handicap—J. W. Wilkinson, 10 h. p. Autocar (1:00), first; J. H. Belden, 10 h. p. Ford (0:45), second; H. J. Koehler, 22 h. p. Buick (scratch), third. Time, 4:17.

Only Five of Fifteen Survived.

Fifteen members of the Kansas City Automobile Club started forth on the morning of September 10 on a hundred-mile road tour. That night, when the stragglers had gathered about the banquet prepared in their honor, there were found to be exactly five survivors of the mud and rain which had turned the race into an endurance contest of the proverbial order. Of these, three had driven White steamers, one a Cadillac and one a Rambler. The remainder of the party was either marooned on the road or laid up in convenient barns along the way.

The course was laid out to Oak Grove and return by way of Hickman's Mills, Lee's Summit and Lavasy. The outward trip had been uneventful for the most part, and all the cars had arrived in season for the luncheon which had been set out for the occupants. On the return, however, the rain began to fall with most dubious effect on the clay roads, and before long the highways were scarcely passable.

H. C. Merrill, last to start, was the first to finish, having made the trip nicely carrying three passengers. Of the others who finished, Wilkins Taylor, carrying four passengers in his White, came in second, and S. T. Stinson, with four up in his Rambler, was third. Seventeen persons in all sat down to the banquet which had been laid for thirty-three, but most of them reported their cars as laid away in the wilderness awaiting fair weather and a few repairs as well.

Dewar Cup Trial Course Selected.

Quite a master stroke was made this week by the sponsors for the Dewar Cup when they secured permission to hold the second annual mile trials on the Coney Island Boulevard, in Brooklyn. Although probably not so fast as the Florida beach, fast time ought to be made on the broad, straight boulevard, and its accessibility will, no doubt, attract thousands to the course. The date has been set for October 18, and as all the crack contestants for the Vanderbilt Cup will be here and will likely compete, the trials ought to prove well worth while.

PLANS FOR ECONOMY TEST

Dates, Distances and Conditions for New York Motor Club's Six-days Competition.

Announcement is made of the conditions to govern the six-day economy test for automobiles to be promoted by the New York Motor Club on October 23 to 28. The objects of the test are plainly set forth to demonstrate how economically persons may be transported between given points in motor vehicles.

There are to be five classes in the competition, arranged according to selling prices of contesting machines, as follows: Class A, for cars not exceeding $750; Class B, for cars in excess of $750 and not exceeding $1,500; Class C, for cars from $1,500 to $2,250; Class D, for cars from $2,250 to $3,500; Class E, for cars exceeding $3,500 in selling price. To insure the proper classification of entrants, manufacturers will be required to accept orders for duplicate cars at the entered prices.

The dates and distances of the daily runs are given as follows: October 23, New York to Philadelphia, 90 miles; October 24, Philadelphia to New York, 90 miles; October 25, New York to Albany, 150 miles; October 26, Albany to New York, 150 miles; October 27, New York to Southampton, L. I., 101 miles; October 28, Southampton to New York, 101 miles. Total distance, 682 miles.

The basis of the charges for purposes of comparison and award are to be made on the following railroad fares per passenger: New York to Philadelphia and return, $4; New York to Albany and return, $6; New York to Southampton and return, $4.53. Total per passenger, $14.53.

Gasolene and lubricants are to be charged for at current rates, and supplies may be taken on only in the presence of official observers. Repairs are to be charged for at a rate per hour to be determined. Heavier charges will be made if repairs and adjustments be made by any one other than the driver of a competing car.

The route to Philadelphia and return will be via Staten Island, Perth Amboy, New Brunswick and Trenton; that to Albany and back will be along the regular Hudson River roads through Peekskill and Poughkeepsie; a south shore route will be followed to Southampton, and a north shore route in returning from Southampton.

An unusual rule, the operation of which will be watched with interest, is that no competing car may pass another on the road without the consent of the observers on both machines. The object of this is to prevent speeding.

Automobile School for Californians.

On November 1 the Y. M. C. A. of Los Angeles, Cal., will open an automobile school, which will be conducted jointly under its own auspices and those of the Automobile Club of Southern California, the latter organization recently appropriating the sum of $1,000 for the purpose.

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TO TEST COMMERCIAL CARS

Germany to Have a Series of Practical Trials—Ten Classes Provided for.

Commercial vehicle and automobile omnibus trials will be held in Berlin, October 9 to 14, under the auspices of the German Automobile Club. The vehicles will be divided into various classes. In the first will be omnibuses built to carry ten passengers each, besides the driver, and 55 pounds of luggage per passenger. In the second class will be vehicles the same as those in the first class, but which have been in use at least three months, and which must be entered by the owners. In the third class will be commercial cars able to carry a load of 2,200 pounds. In class four will be cars of the same capacity, but which have been in use at least three months and are entered by their owners. In class five will be trucks, vans and other vehicles of a capacity of 6,600 pounds. In class six will be vehicles of the same capacity, but which have been in use at least three months and are entered by their owners. In class seven will be vehicles of a capacity of 13,200 pounds. In class eight will be vehicles of the same capacity, which have been in use at least three months and are entered by their owners. In class nine will be trucks, vans and other vehicles with trailers, able to carry a load of at least 6,600 pounds. In class ten will be vehicles of the same kind, but which have been in use at least three months and are entered by the owners.

The competition will consist in daily runs, the vehicles carrying full loads. Those in the six first classes will have to cover 100 kilometres—62 miles—daily for six days; those in the other four classes will cover only 70 kilometres—43.5 miles—daily for six days. The trials will be held upon roads which would ordinarily be covered by the vehicles in service. Manufacturers or owners may enter as many vehicles as they wish, but not more than two of the same class.

In the awarding of prizes, the following points will be taken into consideration: Ease of operation and safety; speed and smoothness of running; construction and durability of tires; constructional execution and durability; degree of annoyance through odor and noise; relation between weight of the vehicle and its load; regularity of operation; consumption; repairs; ease of making immediate repairs and changing parts liable to wear and tear; arrangements to overcome ice and snow; time required to start the vehicle and manipulation in general; value of vehicle; collective results in comparison with horse-drawn vehicles.

Missouri Motorphobes Get Together.

Missouri has stepped into line with New Jersey in forming a refuge for disgruntled motorphobes. A motorphobic convention was held in Mexico, that State, on Saturday, 23d inst., and was attended by one thousand men and women. A number of talks were made, all derogatory to the machines. Some of the white headed citizens present threatened to use powder and ball or pitchforks in fighting the automobile. These "citizens" also threatened to boycott the county papers, should they support automobile owners too strongly. All the talks were full of redhot phrases against the machines and their owners. The resolutions adopted called for regulation of speed and to have owners bonded so they could be made to pay for all damages. Naturally, a committee was appointed to present these resolutions at the next session of the legislature.

Leicester's Constable Again on Warpath.

Massachusetts and her little blue law townlets are becoming positively rabid on the speed question, and it speaks well for the general good behavior of the inhabitants that there is no outbreak of crime while the police are so actively engaged in attempting to prevent the greatest crime of the calendar, speeding a car above the funereal pace set by the petty municipalities.

The Leicester constable who achieved considerable notoriety at the expense of the Glidden tourists, and has been endeavoring to maintain his reputation ever since, has now pressed the town fire hydrants to his aid and has armed himself with a long hose. Should the driver of the car give the policeman the "laugh" when called upon to pull up and pay "toll" to the town of Leicester, he turns the hose on the car and its occupants. According to the view of a prominent Boston lawyer, "it would look as if the town wanted to collect a good deal of money in fines and was afraid the speeders would get away into another town, which would reap the harvest." As soon as some of the individuals who happen to be treated to a douche of cold water bring actions of assault against the perpetrator of this "new method" he will find it cheaper to revert to old ways.

Iowa Finds a New Bugaboo.

Iowa farmers have a new cause of complaint against the automobile, but it is now directed merely against a class and not against the car generally. White automobiles are now the bete noir of the rural agriculturist of that Western State, because they assert that a horse that will pay not the slightest heed to any other kind of car will immediately begin to do "circus stunts" on the approach of the light colored machine. The farmers in certain sections of that State are agreed that black machines scare horses least, but it does not appear that a petition has been circulated asking owners to confine themselves to that color.

Scorchers Misuse "Ambulance Sign."

Those who belong to the healing profession in Chicago, and are at the same time owners of automobiles, have been quick to take advantage of the fact by affixing a red cross sign prominently to their cars, which means immunity from arrest for overspeeding, regardless of the errand on which they happen to be bent at the time, for the policeman has unbounded respect for the "doc." But others have been quick to take advantage of the protection offered by the same magic sign, and have affixed it to their cars, whether physicians or not. Knowledge of this has come to the "force," and it will go hard with the first one caught speeding under cover of an "ambulance sign."

This Farmer's Rage Was Costly.

There is one sadder but wiser man in Caledonia, Wis., to-day. He is Ernest Kell, the motorphobic farmer who brutally assaulted Samuel Hansen, chauffeur for Dr. C. Q. Shoop, of Racine, simply because he imagined "them pesky machines were getting to be a nuisance to farmers hereabouts." Kell was arrested and fined $25 and costs by a local justice, and later made the defendant in a $1,000 damage suit brought by the injured man. Realizing the error of his ways Kell effected a compromise out of court by paying $100 in cash in addition to all the costs. The assault Kell committed was one of the most cowardly and uncalled for that has been brought before the attention of the authorities. The farmer gets out of his scrape pretty luckily, as he would probably have fared much worse had the case come up as per schedule in the November court. The medicine served to Kell has had a remarkable effect upon men and boys who heretofore have been a terror to motorists, as there has not been any trouble since Kell's arrest and punishment.

Two Claimants Sue for Reward.

As an interesting sequel to the somewhat startling case of the Pittsburg chauffeur who ruthlessly ran down a small boy some time since and for whose arrest and subsequent conviction a joint reward was offered comes the story of a series of legal proceedings against the Pittsburg Automobile Club to recover the amount of the reward. Theodore M. Jones, of No. 32 North Fifth street, and Mrs. Sadie Thome each have entered suit for the $250 reward offered by J. K. Mitchell, the employer of Myers, the convicted driver, and the sum of $100 offered by the club. Jones insists that he gave the information which led to the arrest and conviction, while Mrs. Thome, with whom Myers lived at No. 112 North Seventeenth street, make a similar claim. John J. Keefe, of No. 2,225 Van Pelt street, is also a claimant for the pot, and is likely to enter a third suit against the much besuited club.

Winning Over the Gamins.

Chicago has undertaken a campaign of education, with the stone and mud slinging gamin of the streets as the pupil. At present the propaganda is confined to one of the Windy City's citizens, Charles A. Coey, who has been devoting at least one day a week to giving a treat to as many street Arabs from the tenement districts as the tonneau of his Thomas car will hold. To each outing has been added a lecturette to the participants on the evils of stone throwing at cars, from which Chicago has been suffering lately, and a promise of immunity has been exacted from each recipient of a ride.

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PROS AND CONS OF RACING

How the Sport Has Benefitted the Industry—The Florio Cup Contest.

Paris, Sept. 15.—The racing season has terminated with the contest for the Florio Cup over the Brescia Circuit, in Italy. It must be admitted that the season has been a disappointing one, partly through international jealousies, but more especially because we seem to have reached a period when racing can no longer be carried out except at an expense that no club feels itself justified in incurring.

This at least was the feeling before the Florio Cup showed that there was still some hope for the sport in a country where private generosity supplies what is wanting in club funds. So far as France is concerned, the increasingly huge expense of organizing races is making such contests impossible, and the club has been happy to see this financial spectre rise up at a time when it was trying to find an excuse for suppressing races. Great Britain found that the honor of organizing a Bennett race in Ireland was too costly to be repeated, and Germany was crippled for some time by the necessity of making up a heavy deficit for the Taunus race. One of the leading members of the German club said that they would have been bankrupted if they had been required to promote another such event. When, therefore, France would no longer pay the piper, and left other countries to do what they liked with the Bennett Cup, both Britain and Germany said "Nay" to a proposition to organize a race next year, and the agitation in favor of continuing the great classic event suddenly fizzled out. What is more, it was discovered that racing, after all, was no longer needed, and that, having learned all they could from speed contests, manufacturers could not afford to pay heavily for what had merely become a trade advertisement.

All these changes of opinion show that the public are still very much in the dark as to the conditions under which the motor industry is carried on. They have always been arguing on the principle that racing is a sport, whereas it is nothing of the kind, and can never be a sport so long as it is left entirely in the hands of manufacturers. In the old days, when private owners bought high powered cars and drove them in races, we had sport in the best sense of the word. The racing machines were often built to order; or, if makers ran cars themselves, they were always sure of the vehicles, if victorious, finding buyers at fancy prices. Racing cost nothing, and often brought the makers considerable profit, as well as honor and celebrity to the private gentlemen who drove the cars.

The increasing speed of the cars and the necessity of a costly organization changed all this. With entrance fees raised to $2,500, there is no hope for the private owner, and none but rich firms who think they have a good chance will care to stake so much on the hazard of a race. For it is a hazard when so much depends upon such a fragile material as the pneumatic tire, and when the element of luck enters so much into a race, how can it be said to prove the comparative merits of a car? No one can say that the best car wins, for cars equally good or even better may be put out of the race by tire punctures, and makers who have a reputation to uphold hardly like to risk everything upon such a precarious accessory as the pneumatic tire.

If the luck of racing is regarded unfavorably by the manufacturer, it is by no means inconsistent with the sport; and if racing were carried on for the fun of the thing, the incidents would merely add that element of uncertainty that gives so much zest to the struggle between amateur competitors. The sport would offer plenty of interest if it could be pursued on such lines as to bring in private owners, for if they were not stopped by the prohibitive entrance fees there are many sportsmen who would buy high powered cars and run them in races. This would be an excellent thing for the maker, who would find a demand for experimental cars that he is at present unable to get rid of, because they are far too powerful for ordinary use. Others besides Heath, Burton and W. K. Vanderbilt, Jr., would run cars in races if the expenses did not make too great an inroad on their pockets.

That motor car racing is still capable of being carried on as a sport is seen in the success of the Brescia contest for the Florio Cup. This was entirely due to the generosity of a wealthy Genoese gentleman, Chevalier Florio, who is at the head of one of the Italian steamship companies; and as his sole object was to develop the sport in Italy, there were no restrictions placed by heavy entrance fees and other means upon the number and character of the contestants. Professional drivers thus competed with private owners, and the competitors formed the most interesting and varied lot brought together for a long while past. Another thing that contributed to the success of the race was the fact of its being held in a part of the country where a triangular circuit of 103.76 miles was mapped out without touching any towns or villages, the corners of the triangles being formed by the towns of Brescia, Cremona and Mantua. The circuit had to be covered three times to bring up the distance to 311.3 miles. The route is perfectly flat, except a few miles from the start, where there are some undulating stretches, but there are several sharp bends, though none of them of a particularly dangerous character. It was at first intended to run the race without compulsory stoppages, but if the great plain on which the Brescia circuit is mapped out is specially suitable for racing it suffers, like all the Italian roads, from the thick, impenetrable dust. Something was done to alleviate this trouble, though it could not be got rid of altogether, and the organizers had to establish two neutralizations, or spacing controls as they are called, to prevent the cars from overlapping each other. The method adopted is to trace two lines across the road about twelve yards apart, between which each car has to stop, and is sent off again when the vehicle preceding it is far enough ahead. Thus the stopping times may vary with each car, and this collection of times is one of the most annoying things in calculating the positions. Besides, it seriously minimizes the interest of the race.

According to the arrangements the spacing times should have been telegraphed or telephoned to the timekeeper's shed immediately the cars had passed, whereby it would have been possible to put up the net racing times on the board. In this way the public would have been able to see exactly the positions of the cars as they passed the stands. But these arrangements, however carefully they may be made, never seem to work out satisfactorily in practise. They failed in the Auvergne, and they failed again at Brescia, where the timekeeper did not get the complete spacing times until five hours after the race had terminated. Under these circumstances it is easy to see how the race can lose its interest. After seeing the cars travel the first round there is nothing particularly exhilarating in watching the vehicles flash past the stands one after the other without being able to get the faintest idea as to whether one is gaining on the other. It seemed to be anybody's race. This bewildering uncertainty told sadly upon the patience of the foreign visitors, who found that with the lack of interest and the tropical heat the race was becoming terribly monotonous, but if the foreigners retired in search of cooling drinks, and left the race to look after itself, the Italians kept themselves in a high state of enthusiasm as they cheered the passing drivers.

There is no people more strongly attracted to motor racing than the Italians, and what is more, their sense of patriotism was stimulated by the belief that the Italian cars were having things all their own way. At first Hemery on his Darracq and Rougier on his De Dietrich aroused the hopes of the French visitors, but it soon became evident that some of the Italian cars were traveling faster, Ceirano on his Itala going remarkably strong and covering the first 300 kilometres at an average of a shade over 70 miles an hour, thereby winning the Italian cup. Soon afterwards Ceirano punctured a tire and ran for a considerable distance on the rim, when the wheel broke. Notwithstanding the high speeds at which the cars were driven there were no serious accidents, the only sensational incident being the overturning of the Mercedes of Mariaux, but the driver righted the car again, which was not in the least damaged, and continued the race.

This freedom from accident shows that on a suitable course there is little danger in racing, even when some of the cars are piloted by amateurs. All the Mercedes, for instance, were driven by their owners. Of the twenty-one cars starting only twelve finished, all the others being put out by tire punctures. It was not until late in the afternoon that the results could be declared, when it was found

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that Raggio had won on his Itala, his time for the 311.3 miles being 4 h. 46 m. 47 s. Raggio is a wealthy gentleman from Genoa who took part in the race as an amateur, and until he had possession of his racing machine he had never driven anything speedier than a 24 hp. touring car. His victory was sensational, for until the results were declared late in the afternoon no one had suspected that he was anywhere near the first, and if Raggio secured the victory for Italy the Italian triumph was still more complete by the fact that all the three trophies offered were carried off by the Itala cars. They secured the Florio Cup and the Italian Cup, as well as the Salemi Cup for regularity.

The following are the results: 1, Raggio (Itala), 4:46:47; 2, Duray (De Dietrich), 4:56:20; 3, Lancia (Fiat), 4:57:04; 4, Hemery (Darracq), 4:48:12; 5, Rougier (De Dietrich), 5:12:50; 6, Nazzaro (Fiat), 5:12:52; 7, Fabry (Itala), 5:18:10; 8, Wagner (Darracq), 5:19:02; 9, Florio (Mercedes), 5:29:11; 10, Gabriel (De Dietrich), 5:33:44; 11, Terry (Mercedes), 6:21:45.

This success of the Itala, following upon the admirable running of the Fiats in the Auvergne, has enormously raised the prestige of the Italian industry which, having been created more recently than in other countries, has already taken its position in the first rank. The manufacture of cars is not new in Italy, for it has been carried on for many years past, but the beginnings of the industry were so unsatisfactory that nearly all the firms dropped out or went into liquidation or were amalgamated, the only survivor being the F. I. A. T. of Turin, which is now one of the most flourishing motor manufacturing concerns in the world. The success of the F. I. A. T. is encouraging other capitalists to go into the industry, with the result that several new marks have lately been created, and how promising they are is shown by the sensational triumph of the Itala. All these vehicles run something upon the same lines. Taking first of all the Mercedes as a model they have been refined and modified until they have developed into an essentially national type of car, in which it must be admitted that not the least interesting feature is the excellent workmanship and finish. The Italians are good at this kind of work, and there is no doubt that the industry will develop rapidly in the early future.

As Italy has made her reputation on racing so she seems determined to carry it on in spite of the partial suppression of long distance speed contests in other countries. The Florio Cup race is to be run upon a much more ambitious scale next year, with prizes of something like $30,000, and it is hoped that the decline of racing elsewhere will have the effect of diverting the attention of makers to the Italian meetings. There is also to be a meeting in Sicily, the home of Chevalier Florio, for which big prizes will be offered, and altogether it seems as if Italy will be making considerable efforts to develop the industry and public interest in the motor car during the next few years.

HONORS WERE DIVIDED

Oldfield and Cedrino "Star" at Rhode Island Racemeet—Barney Wins a "Championship"

Nearly 15,000 people—in fact, the largest crowd that has attended an automobile race meet this season—gathered last Saturday afternoon at the Narragansett Park track, Providence, to witness the deferred race meet of the Rhode Island Automobile Club. Weather conditions were ideal, and the huge grandstands were filled to overflowing, late comers being obliged to stand. The parking spaces along the guard rail were thickly fringed with automobiles and spectators, while all along the fence enclosing the track a dense mass of happy humanity had congregated. The track was in fine shape, hard and with very little surface dust, and good time was made in all the events. The best time of the afternoon was made by Oldfield, who covered five laps in 4:41 1-5. George G. Reed, driving a 40-horsepower Stearns, also showed to advantage in the touring class. He went the five miles in 5:53 2-5, defeating E. C. Bald, in the Columbia.

The first event was a five-mile invitation affair, for three Stanley steam cars, driven, respectively, by F. F. Ladd, W. W. Little and William R. Files. The car operated by Files drew a lead in the first lap, and came steaming across the tape far ahead. Time, 9:13 2-5. Ladd was second.

E. C. Bald, driving a Columbia, could not get away from the tape quick enough in the stock car event for machines listing at from $1,000 to $1,800, and H. A. Capron, in an air-cooled car, showed the Columbia man the way to the tape. Bald also fared poorly in the event for cars selling at less than $5,000. There were only two starters—Bald in a 40-horsepower Columbia and George G. Reed, who drove a Stearns car of the same power. In this event occurred the only hitch during the afternoon. On the programme it was worded: "Five miles; stock cars, catalogue equipment, selling $5,000 or under." Joseph Crowell and L. F. N. Baldwin had entered two Stanley steam cars, and as they had not been notified that these cars were ineligible naturally breasted the tape for the start. Bald and Reed refused to start if the steam cars were allowed to go, so the judges scratched the event. Later Bald and Reed drove the race, the latter winning out handily in 5:53 2-5. His time for each mile was 1:15, 1:08 2-5, 1:08 4-5, 1:10 3-5 and 1:10 3-5.

Naturally the most interest centred on Barney Oldfield, in the Peerless, and Emanuel Cedrino, the F. I. A. T. driver, who, for some inexplicable reason, has been dubbed the "Terrible Dago." Cedrino is a very docile individual, so the pseudonym seems malapropos. In the first heat of a five-mile free-for-all Oldfield and H. D. Church, the latter in a stripped stock Peerless, were the starters. The redoubtable Barney was worsted in this heat. The judges declared it a tie, but, as the cars came under the wire Oldfield was a bonnet behind. Time, 6:09. Cedrino, in the Junior Fiat, easily captured the second heat, leading William Hilliard, 90-horse power Napier, across the tape by over 50 yards. Time, 5:09. Oldfield's refusal to start in the final heat was a keen disappointment to the spectators, and they gave vent to their feelings in an impressive manner. At the finish Cedrino was three-eighths of a mile ahead of Hilliard, with Church trailing the Napier car by seven-eighths of a mile. The time was 5:02 2-5.

After this Oldfield went against his own record of 4:29 for five miles, but was unable to make any impression upon it. He made an excellent showing, though, doing the distance in 4:41 1-5

The so-called "five-mile national championship" was the most exciting event in the programme, although there were only two starters—Oldfield and Cedrino. The latter secured the lead and pole at the gun and was not headed until the two-mile post. Then Oldfield went past the little Italian car with a roar, and the erstwhile "Terrible Doga" had to eat dust the rest of the distance. At the finish the Peerless driver led by one-fourth mile. Time, 4:47. The other events were more or less interesting, and each received the applause it deserved. The summaries:

Five miles, for Stanley steam cars—Wm. R. Files, first; F. F. Ladd, second. Time by miles, 2:03 1-5, 1:48 2-5, 1:55 1-5, 1:48, 1:38; total, 9:12 .-5.

Five miles, for stock cars listing at $1,000 to $1,800—H. A. Capron, 12-horsepower Franklin, first; E. C. Bald, Columbia, second; E. Danes, 12-horsepower Franklin, third. Time, 7:45 2-5.

Five miles, for stock cars selling for $5,000 or less—Geo. G. Reed, 40-horsepower Stearns, first; E. C. Bald, 40-horsepower Columbia, second. Time, 5:53 2-5.

Five miles, free-for-all—First heat—Barney Oldfield, 60-horsepower Peerless, and H. D. Church, 24-horsepower Peerless, tie. Time, 6:09. Second—Emmanuel Cedrino, 24-horsepower F. I. A. T., first; William Hilliard, 90-horsepower Napier, second. Time, 5:09. Final heat—E. Cedrino, 24-horsepower F. I. A. T., first; William Hilliard, 90-horsepower Napier, second; H. D. Church, 24-horsepower Peerless, third. Time, 5:02 3-5, 5:28.

Five miles, against time, by Barney Oldfield, 60-horsepower Peerless—Time of miles, 0:56, 0:56 2-5, 0:56, 0:56 1-5, 0:56 3-5. Total, 4:41 1-5.

Five miles, "national championship"—Barney Oldfield, 60-horsepower Peerless, first; Emanuel Cedrino, 24-horsepower F. I. A. T., second. Times, 4:47, 5:01 3-5.

Special match race, five miles, for $500 purse—Edw. Shay, 60-horsepower F. I. A. T., first; R. N. Judd, 60-horsepower Mercedes, second. Times, 6:11 3-5, 6:45 4-5.

Five miles, for stock cars listed at $1,800 to $2,800—C. D. Snow, 24-horsepower Stevens-Duryea, first; Clifford Edwards, 20-horsepower Ford, second; D. O. Black, 15-horsepower White, third. Times, 7:19 4-5, 8:51.

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PACKARD'S 1906 MODEL

Specifications of the Improved Car—New Features Include Increased Size and Power.

While retaining all of its distinctive "Packard" lines that have made the cars of that company readily recognizable wherever seen, the 1906 model will embody numerous new features, chief among which will be a considerable increase in size and power. It will officially be known as the "Packard 24," and will have a much longer wheel base, as well as 35 to 40 per cent more power than the Model N—in fact, a much larger and stronger car throughout.

The cylinder castings, in pairs with integral water jackets and valve chambers, are imported from France in the rough. Their dimensions are 4½-inch bore by 5½-inch stroke, the pistons having four rings. These figures represent an increase of 20 per cent in piston area over the Model N, and fully double that in increased power, as already referred to, though the additional weight entailed is said not to exceed 5 per cent over that of last year's smaller engine. Instead of being all on one side, the valves have been separated, the intake being placed on the right and the exhaust on the left hand side of the cylinder. While this permits of increased size, it also necessitates the use of two cam shafts, which are enclosed in the crank case to insure lubrication. The size of the flywheel has been increased in proportion, as has also that of the crank shaft, which is of nickel steel.

The substitution of Hess-Bright ball bearings in place of the usual cone forms in the transmission, with a slight lengthening of the latter to provide additional gear face, marks the only change is this essential.

Probably the greatest departure to be found in the new model is that of the adoption of the Eisemann high tension magneto for ignition, although the Packard builders have been studying this system and considering the advisability of adopting it ever since its introduction in this country. The generator is bolted to the front arm of the motor support, and is operated by chain from a sprocket on a small countershaft geared to the left cam shaft. The current is carried through the usual single high tension, vibratorless coil on the dash to the commutator. Both as a reserve and for the purpose of starting from the seat the accumulators are retained, a single vibrator coil being housed in the same case with the magneto coil. One switch located in the coil box gives either the magneto or battery or neutral. Individual switches connecting with the plug stems are further provided in order to facilitate the location of faults.

Slightly increased size distinguishes the carburetter of the new model, though the regular Packard design has been adhered to with the exception of the addition of a new poppet auxiliary air valve, this supplementing the regular air control by lever on the dash.

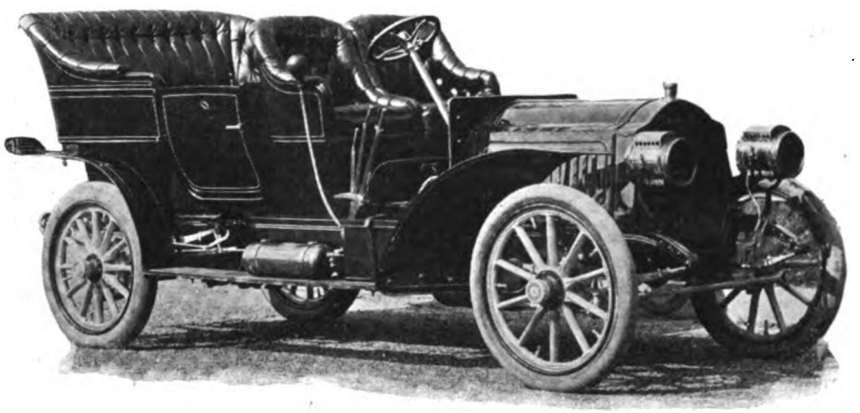
The counterweight form of governor has been discarded in favor of a water governor operated by the pump—a form that has been used more or less by other makers, with considerable satisfaction. The pump being geared direct to the cam shaft, its speed is always in definite relation to that of the motor, and any change is immediately communicated to the diaphragm of the governor, which automatically adjusts the throttle. A departure has also been made in the crank case, the upper half of which is cast with a solid web between the arms, affording complete protection and constituting an improvement over the usual sheet metal pans. A change has likewise been made in the suspension, which now consists of four semi-elliptic springs, instead of the former three-point suspension, with a single transverse spring forward. The front springs are now 40 inches long and the rear 56 inches, both being 2 inches wide and having six leaves.

The lines of the body remain practically the same, the long wheel base permitting of a very roomy tonneau. A locker with an upholstered cover placed against the rear of the front seats, and a brass foot rail for the rear-seat passengers that may be folded out of the way when not wanted represent conveniences that will be appreciated.

A summary of the remaining features of the car, which either do not differ from last year's model or so slightly as not to call for special mention, is as follows: Transmission, three speeds forward—10, 25 and 40 miles an hour—and reverse. Shaft drive, direct on high speed, with Packard universal joint; transmission and differential housed in single unit casing on rear axle. Splash lubrication, crank case divided laterally to secure constant level; supply by force feed through single plunger pump, and two sight feeds on dash. Leather faced cone clutch of Packard type, operated by foot pedal and interconnected with emergency brake, locking it in disengaged position when brakes are on. Cooling by tubular radiator and fan driven by wide, flat belt; supply by gear driven rotary pump. Thirty-four inch artillery wheels with cast steel hubs, twelve spokes front, fourteen rear, shod with 4-inch tires on front and 4½ on rear. Pressed steel frame of channel section, 4¾ inches deep by five-sixteenths of an inch thick, reinforced by cross members of same material. Length over all, 151 inches by 28 inches wide forward and 33½ inches wide in the rear. Front axle, cold drawn steel tubing, dropped at center; rear axle, same material, carried on double and triple ball bearings. Brakes, four in number, internal expanding, operated by foot pedal and external clamping on each rear wheel by hand lever. Gasolene tank under front seat, capacity 20 gallons. Oil cups on steering knuckles and steering cross tube joints; grease cups on rear axle.



PACKARD 24, FRONT VIEW.



PACKARD 24, SIDE VIEW.

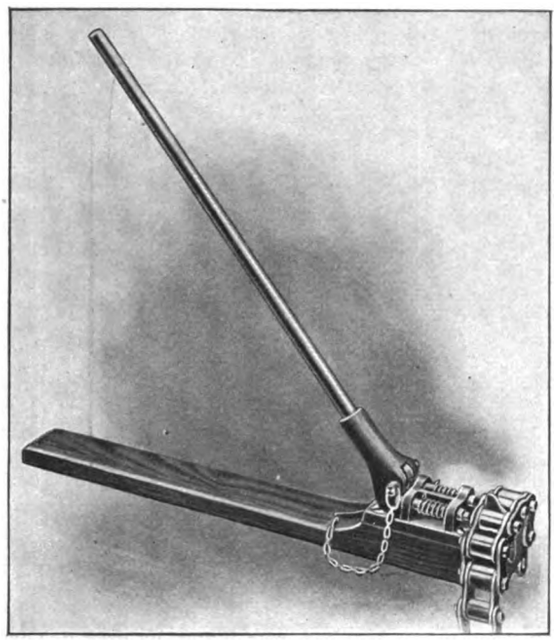
Name Denotes Speed Capacity.

"Legalimit" is to be the expressive cognomen of a car shortly to be placed on that market by a London firm. Its name is further intended to be significant of its capabilities, for it is to be designed not to exceed the legal limit, but to be capable of an average speed of twenty miles up hill or down without changing gear.

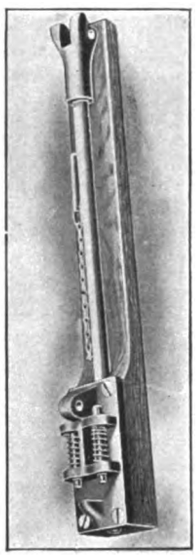
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Whitney's Chain Repair Outfit.

Repairing a chain on the road is not only a dirty job, but a more or less difficult one even for those skilled in the use of tools, but, due to the Whitney Mfg. Co., Hartford, Conn., it is to be made a much easier operation. All of the Whitney detachable chains contain one connecting link fitting loosely on the rivets and readily removable by hand without any trouble. This link is distinguished from the others by having notches in its top surface. All of the other detachable links on these chains are, however, purposely forced tightly onto the rivets, and as the latter are made very hard, the ends will sometimes crack through the cotter pin hole when their removal is undertaken with the aid of a hammer or a wrench.



CHAIN REPAIR OUTFIT, READY TO USE.



FOLDED TO CARRY.

In order to obviate this as well as to eliminate other difficulties in removing links, the Whitney company will place the new repair outfit pictured in the accompanying illustrations on the market shortly after October 1. One of the cuts shows the device ready for operation, and the other, with the handle detached so that it occupies but a small amount of space in the tool box. With the aid of this the links may be removed with ease and without danger of damaging any of the parts. It will be made for all sizes of Whitney detachable roller chains.

How a Hood Was Confiscated.

"Any automobile driver who is shy the hood of his White touring car may have same by applying to the marshal of Euclid (Ohio)." Thus runs the tenor of an advertisement issued from the executive headquarters of that little suburb of Cleveland. The announcement does not say that upon presenting himself the owner will promptly be fined twice as much as it would cost him for a new hood, but that particular owner will be able to read between the lines, and there is little doubt but what that particular hood will remain the property of the peaceful hamlet until the next auction sale of unclaimed effects is held.

The marshal of Euclid is conducting the anti-speed crusade usual in such villages, and, other methods failing, he has adopted one familiar to the small boy on Halloween. This is nothing more than a rope stretched across the highway, with the marshal in the bushes at one end of it. Up the road about two hundred yards is a trusty assistant with a red flag and a gun. The assistant waves his flag at every one of the visiting cars to slow down, and every one of them pays not the slightest attention, so runs the story. He then fires the gun and his chief does the stop watch trick, making rapid mental mathematical calculations meanwhile, for the accuracy of which policemen are noted. The answer is always the same; he wins and stretches the rope taut, all this in the interval of time that it takes a speeding car to cover two hundred yards of road. And the victims all stopped when they saw the rope, until the owner of a White was willing to back his car against it, and opened up, with the result that the ring to which it was made fast was forcibly pulled from the telegraph pole, and the car went by so fast that the marshal could not even see its number. But the car lost its hood in the operation, hence the ad.

Where Travel is a Delight.

Many men of many minds are all agreed upon one point: The service of The Lake Shore Railway is as near perfection as it is possible for brains and money to produce. Safety, comfort and speed are the keynotes of the road, and safety, comfort and speed have been attained to a degree never before reached in all the history of railroading. Wise travelers know this to be so and take particular care that their tickets read "Via the Lake Shore."

Combines Volt and Ammeter.

"Two meters in one" is the chief characteristic of the new battery testing instrument placed on the market by the Connecticut Telephone & Electric Co., of Meriden, Conn. It is a combined volt and ammeter, designed for testing the voltage of accumulators or the amount of current in dry cells, and accordingly has a double scale and three connections. The scales are graduated from zero to 6 volts, and zero to 24 or 30 amperes. It is also made in a single reading style for dry batteries only, and is graduated to 30 amperes. Both are carefully calibrated, and the needle supports are arranged for delicate and accurate readings.

An exclusive feature of the instruments made by this company is a ground connection to the case by means of which a cell may be tested without the necessity of using the flexible cord. To do this the metal case is pressed against one terminal and the pointer for volts or amperes, as desired, against the other. The instruments are guaranteed to be accurate, durable and free from mechanical defects, and are sold at prices that should add to their popularity.



"TWO METERS IN ONE."

Montclair Plans Passenger Service.

An automobile passenger service is planned for Montclair, N. J., according to an application made at the meeting of the council last Monday sight. An exclusive license will be asked to operate the line over the streets not now occupied by trolley lines for a period of fifty years, subject to cancellations of charges at any time after the first ten years have expired, on a majority vote of the people. The petitioners are said to be responsible business men of New York and Montclair, and include Daniel B. Ely, director of the Interstate Securities Co., of New York, and C. H. Silliman, a retired banker. In the petition it is stated that the maximum rate of fare will be two cents per mile, and the minimum charge will be five cents. The service will consist of a coach each way over the route adopted every fifteen minutes from 7 a. m. to 9 p. m.; every half hour from 9 p. m. to 11 p. m., and every hour from 11 p. m. to 1 a. m. The license is to be revoked unless service is inaugurated within six months from the date it is granted.

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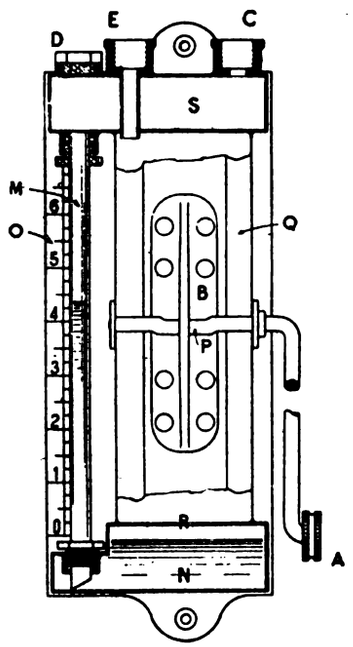
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FUEL GAUGE ON THE DASH

New Device Which Shows the Contents of the Gasolene Tank at a Glance.

Despite the hundred and one different devices in the form of gauges for determining the amount of fuel in the tank of a car, none of them appears to be more than an approach to what represents the height of convenience in this respect. In none of them, so far as known, is it possible to know how much there may be remaining in the tank without leaving the car.

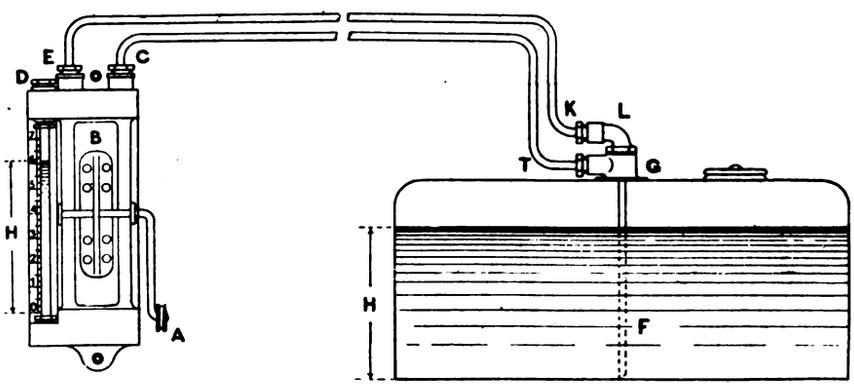
Where the tank happens to be under a seat, a location no longer usual in up to date models, and when it is at the rear and under the end of the tonneau with only the filler



FUEL GAUGE, FIG. 1.

nozzle protruding, practically the same thing applies. What has been wanted all along is a means of immediately ascertaining the exact amount of fuel in the tank without leaving the wheel and it has apparently remained for an Irishman to provide the means for doing this, while on the other hand he apparently had to apply to a Teuton to make it for him, as it is termed the Murphy gauge and is made by Schaeffer & Budenberg, London.

The indicating portion of the gauge is secured to the dashboard within easy reach and plain sight of the chauffeur. The registration is not constant, but when it is desired to learn the depth of fuel in the tank it is only necessary to raise a small lever and depress it again, when a column of liquid will rise in the gauge glass to a height equivalent to that in the tank. Regardless of how many times this operation is repeated the indication shown will always represent the amount in the tank. An idea of the mechanism used in the gauge, as well as the manner of operating it, may be had from the accompanying illustrations. In Figure 1, showing the gauge itself, will be noted the detail of the latter. As a preliminary, kerosene is poured in at D until it becomes level with the zero mark on the gauge glass. When it is desired to register the height of water in a tank water is used in place of kerosene. This is done before the gauge is connected up. A special connection G is necessary on the tank itself, this holding a pipe dipping close to the bottom, as shown at F.



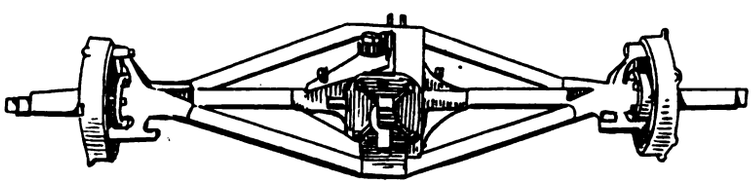
FUEL GAUGE, FIG. 2.

This communicates with the opening E in the instrument itself, and when this connection is complete the gauge is ready for use. The level of the tank in relation to the gauge, nor the fact that it is open to atmospheric pressure, has no effect on the operation of the gauge, but the tubing and connections must be tight, as any leakage would cause inaccurate readings. Further, the tank may be under additional pressure, as is the case in many instances on modern cars, in which case the gauge will still operate as accurately as where this does not exist, but an extra line ending at C must be provided, in order that the pressure in the tank and in the gauge may be equalized.

The action of the instrument is as follows: When the lever A is slowly raised and lowered the bellows B is compressed by the crank P, raising the pressure in the system. As this pressure rises the gasolene is driven down the pipe dipping into the tank F until it reaches the bottom, when no further increase is obtained. It will readily be apparent that the pressure thus induced in the system and required to force the liquid down the pipe F to the bottom is exactly equivalent to the head indicated by H. However, since the line tube and the bottom of the gauge glass M are under exactly the same pressure, by reason of the hole R in the chamber holding N, produced by the bellows B, it must also raise the level of the liquid in the gauge glass to a height corresponding to H. Kerosene being slightly heavier than gasolene will show a discrepancy by recording a fraction less than the actual amount, but the difference is so small as not to be discerned in practise. Where the tank is under pressure the second line is required in order to transmit this to the gauge glass, and since there is an equivalent pressure below it by reason of the connection of the other tube with N its effect is neutralized.

New Axle for Cardan Drive.

When first advocated, the problem of cardan shaft drive was somewhat complicated by the necessity of supporting a large fraction of the weight at the same points as the drive. The usual tubular construction so generally adopted for this purpose has, however, proven how well founded were the ideas of its first proponents, and it is safe to say that few, if any, of the many evil results prophesied by the adherents of the chain drive for all weights have been materialized in the last two years' practice where the axle has been properly built. Since its introduction there have been scarcely any changes of moment to record in the design of this part of the car, so that the departure of a foreign built car in this respect is of interest.



REAR AXLE WITH CARDAN DRIVE.

This is the Diamant car, which, apart from its rear axle, does not embody any unusual features. The construction of the latter as well as its radical divergence from the type common in practice will be noticeable at a glance from the illustration. The driving shaft is not surrounded or encased by a hollow axle, as is customary, but is supported by a trusslike construction carrying the weight of the body and relieving the live axle of this strain. The differential gear case is entirely supported by the tubular construction, to which it is made fast top and bottom, both of these tubes ending in a universal or cardan joint supported by the brake drums.

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How to Preserve Rubber Goods.

Many of the peculiarities of rubber have not been recognized by those whose business includes the handling of a greater or less quantity of tires, inner tubes and the like, despite the fact that a large number of the dealers and garage keepers in the business are graduates of bicycle days. Only too few appear to realize that it is above all a material that is subject to more or less rapid and serious deterioration unless properly handled.

Frequent complaints are made by garage keepers and car owners that tubes and tires which they have had but a comparatively short time have begun to show signs of surface cracks. Usually the claim is that the rubber has "perished" where the complainant stoops to gramatical form, or has become "dead" where he does not regard the formalities. But more often the complainant is quite indignant and descends to the vernacular to the extent of telling the manufacturer that the tires he sent out were "rotten."

One of the commonest sights in the "automobile row" of any large city, is the stack or festoon of tires that adorns the windows of the supply shops. In such a position they get the full benefit of the direct rays of the sun. No rubber of whatever quality will stand continued exposure to the light and particularly to the baking effect of direct sunlight, but there are men who have been in the trade for years who have never learned this simple fact.

Where the garage is concerned it is nothing unusual to see tires allowed to come in contact with gasolene and oil, than which few things are better calculated to destroy the value of the rubber. It is certainly to the interest of the dealer to see that his stock of tires is not displayed in the store window, nor hung up under the glass roof of the garage. A high temperature and exposure to light are alike detrimental to the rubber and nothing but proper storage will suffice to preserve it in the best condition, either for sale or for use.

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New York.

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I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the re'r, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.
H. S. M. - G.

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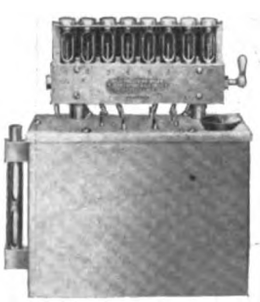
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The Week's Patents.

799,368. Electrical Sparking Ignition system for Gas Engines and Starting Switches Therefor. Vincent G. Apple, Dayton, Ohio. Filed November 9, 1903. Serial No. 180,464.

Claim—1. In combination with an engine igniter, a dynamo arranged to operate consistently with the engine, a battery, a magnetically responsive switch member adapted to complete a circuit connecting the igniter with either the dynamo or the battery, an electro-magnet included in a constantly closed circuit with the dynamo arranged when energized to attract the switch member to close the circuit connecting the dynamo and igniter, and suitable circuit connections for the parts specified.

799,374. Rubber Fabric. Christian H. Gray, Silverton, and Thomas Sloper, Devizes, England; said Sloper assignor to said Gray. Filed October 5, 1903. Serial No. 175,881.

Claim—1. A new article of manufacture, consisting in a tire fabric composed of approximately parallel cords crossing the tread from the edge of the tire and so arranged that the longer circumferential outline at the tread formed by the curve is completely filled by the cords which lie substantially as close together at that line as they do at the smaller circumferential outline at the edges of the cover, substantially as set forth.

799,388. Transmitting Mechanism. Frederick S. Keyes, Warren, Mass. Filed March 29, 1905. Serial No. 252,680.

Claim—1. The combination with a driving member and a driven member, of a plurality of circularly arranged springs for transmitting power between the members, each of said springs comprising a plurality of independent sections.

799,393. Circuit Breaker for Explosive Engines. Ralph M. Lovejoy, Meredith, N. H. Filed January 30, 1905. Serial No. 243,268.

Claim—1. In a device of the character described, the combination of a contact lever studded with contact points, some of which are insulated from said lever and others in electrical communication therewith, a part engaging with and disengaging from said contact points, and electrical connections for said lever and said part.

799,459. Speed Regulator for Explosion Engines. Georg Duffing, Mülheim-on-the-Rhine, Germany. Filed June 1, 1903. Serial No. 159,700.

Claim—1. In a gas engine, the combination, with means for varying the mean speed of the engine, of means for maintaining a substantially uniform velocity of inflow of the explosive gases to the cylinder under different mean speeds.

799,471. Shaft Sleeve for Roller Bearings. John Kincaid, Vancouver, Canada. Filed December 4, 1903. Renewed August 10, 1905. Serial No. 273,676.

Claim—1. An axially divided sleeve for roller bearings, provided with a series of V-shaped external grooves adapted to receive reversely cone shaped rollers, lugs carried on each end of the divided sleeve and projecting parallel to and in the same direction as the shaft, said lugs adapted to grip the shaft, and bolts passing through the said lugs to hold them in their shaft gripping position for the purposes specified.

799,537. Explosive Engine. William E. Collier, Muskegon, Mich., assignor to Racine Boat Mfg Co., Muskegon, Mich., a corporation of Michigan. Filed September 16, 1904. Serial No. 224,686.

Claim—1. In an explosive engine, the combination with the crank shaft of the engine, the inlet valve mechanism for the explosive mixture and the ignition mechanism, of a sleeve slidable on the said crank shaft, a lever pivoted to the engine frame for sliding said sleeve and operative connections between said sliding sleeve and the valve and ignition mechanisms, constructed to operate in unison said mechanisms to control the supply of explosive admixtures to the engine cylinder, and to regulate the sparking period of the ignition device relative to the stroke of the piston.

799,551. Anti-Skidding Device for Vehicles and Cycles. Henry S. Eyre, St. Leonards-on-Sea, England. Filed February 23, 1904. Serial No. 194,940.

Claim—1. An anti-skidding device for application to the wheels of vehicles and cycles, consisting of flexible members mounted upon the wheel laterally of the tire and in proximity thereto and protruding beyond the tire of the wheel to such an extent as to be capable of passing completely under the tread or outer peripheral surface of the tire, substantially as described.

799,638. Resilient Tire for Road Wheels. Alfred Ducasble, Neuilly, France. Filed September 8, 1904. Serial No. 223,757.

Claim—1. A tire for the wheels of road vehicles, consisting of a rubber body part having separate chambers formed therein and continuously open air ducts leading from said chambers directly to the atmosphere, substantially as described.

799,662. Covering for Automobile Tires. Benjamin Nathan, New York, N. Y. Filed December 20, 1904. Serial No. 237,598.

Claim—1. A cover adapted, when closed about a tire, to form an annular tube, the opening to receive the tire being from the front and all exposed edges of the cover in its closed or tubular form being overlapped in the same general direction, to shed rain when the cover and its inclosed tire are hung up.

799,690. Vehicle Brake. Thomas L. Sturtevant, Quincy, and Thomas J. Sturtevant, Wellesley, Mass., assignors to Sturtevant Mill Company, Portland, Me., a corporation of Maine. Filed January 10, 1905. Serial No. 240,424.

Claim—1. The combination with a stationary casing and a driven part or shaft, of a

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multiple disk brake comprising a series of disks or rings, a portion of which are connected with said driven part or shaft, to rotate therewith, and a portion of which are engaged with said casing so as to be restrained from rotation, combined with a pressure cylinder attached to said casing, and a piston in said cylinder for forcing the said disks or rings into fractional contact with each other when a braking force is to be applied.

799,691. Vehicle Brake. Thomas L. Sturtevant, Quincy, and Thomas J. Sturtevant, Wellesley, Mass., assignors to Sturtevant Mill Company, Portland, Me., a corporation of Maine. Filed April 24, 1905. Serial No. 257,102.

Claim—1. The combination with a stationary part or casing and a driven part or shaft, of a multiple disk brake, comprising disks or rings, a portion of which are connected with said stationary part or casing, so as to be restrained from rotation, and a portion of which rotate with said shaft, a pressure cylinder, a piston therein, and levers interposed between said piston and said disks.

799,703. Steering Mechanism for Automobiles. Charles O. Barnes, Oswego, N. Y., assignor to Marcia I. Barnes, Oswego, N. Y. Filed June 8, 1905. Serial No. 264,278.

Claim—1. In a steering gear for automobiles the combination with a steering post and a screw therein, of a two part nut engaging the screw, a pitman and adjustable means connecting the pitman and both sections of the nut.

799,720. Electromagnetic Clutch. Henry H. Cutler, Milwaukee, Wis., assignor to the Arnold Magnetic Clutch Company, Milwaukee, Wis., a corporation of Wisconsin. Filed September 22, 1902. Serial No. 124,354.

Claim—1. A clutch having a magnet member and an armature member, of means for reversing the current through the coil or coils of said magnet member when it is desired to de-energize the same, means for resiliently pressing said armature member away from said magnet member, whereby the armature is freed from the magnet when the latter is de-energized, substantially as described.

799,778. Equalizing Gear for Vehicles. Otto Cullman, Chicago, Ill. Filed June 27, 1904. Serial No. 214,425.

Claim—1. In an equalizing gear the combination of a two part casing, such parts provided, respectively, with annular recesses on the inner faces thereof, and one of such parts provided with an external annular flange on the edge thereof adjacent to the other part., with an annular rabbet on such flange, a sprocket rim fitting the rabbet, bolts extending through one part of the casing and through the annular flange on the other part, bolts extending through the sprocket rim and through the annular flange, axle gear wheels respectively journaled in the parts of the casing, and pinions journaled in the annular recesses to intermesh with the axle gear wheels, substantially as described.

799,780. Self-Propelled Vehicle. Joseph Le Conte Davis, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York. Filed April 9, 1904. Serial No. 202,413.

Claim—1. In a power transmission mechanism, a driving member, a differential gear having its central member connected thereto, a driven member connected to one outer member of said gear, a dynamo electric machine connected to and adapted to assist in driving the driven member, and a second dynamo electric machine connected to the other member of said gear.

799,791. Vaporizer for Hydrocarbon Engines. Frank I. Hitchcock, Bridgeport, Conn. Filed August 21, 1903. Serial No. 170,256.

Claim—1. The combination in a vaporizer having a body portion, a caporizing chamber, an air inlet port and a fluid supply valve, of a weighted valve for said port, an adjustable stop set to limit the upward movement of the valve to represent a full open port at high speed, a piston plunger operating between the air chamber and the vaporizing chamber to actuate the fluid supply valve, an adjustable stop to limit the upward movement of the plunger, for the purpose set forth.

799,805. Power Transmission Mechanism. Charles G. Simonds, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York. Filed April 8, 1904. Serial No. 202,144.

Claim—1. In a power transmission device, a driving member, a driven member, a series of rotatable members, two rigidly connected gears rotatably mounted on each of said rotatable members, a series of pinions engaging said gears and connecting said rotatable members to each other and to the driving and driven members, and means for holding an yor all of said rotatable members stationary and for locking any of them to a pinion.

799,856. Internal Combustion Turbo-Motor. Charles Lemale, Paris, France. Filed October 21, 1904. Serial No. 229,381.

Claim—1. A combined atomizer and igniter forming a lighting candle and designed especially for the feeding and igniting of continuous combustion turbo-motors, comprising a tubular device adapted to be introduced into the air tube and to receive combustible liquid at its outer end and to discharge the same at its inner end in atomized form into the surrounding air channel, and having at its extreme inner end an exposed wire adapted to be maintained incandescent so as to ignite continuously the combustible mixture formed in the space around the tubular device.

799,859. Vehicle Tire. Frank A. Magowan, Trenton, N. J. Filed June 6, 1905. Serial No. 264,002.

Claim—1. A tire comprising a flexible tube filled with a mass of hollow soft rubber bullets, each containing gas in a state of high compression, whereby each bullet is distended to such an extent that it conforms throughout to the adjoining bullets or wall of the tube, the gas in each bullet being capable of expanding the bullet far beyond its normal capacity when the bullet is released from confinement.

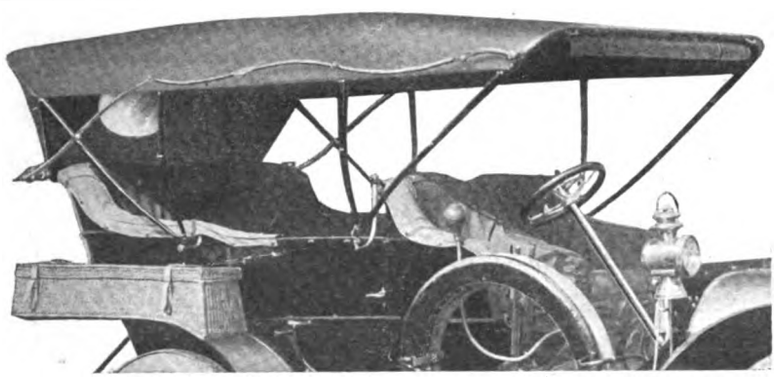
799,946. Power Transmitting Mechanism. Fitzroy M. Slocum, Erie, Penn., assignor of one-half to Harry V. Ashby, Erie, Penn. Filed December 27, 1904. Serial No. 238,399.

Claim—1. In a power transmitting mechanism, the combination of oppositely faced gears C C; the pinion D mounted between them and in mesh therewith; the rock lever G mounted concentrically with the gears C C and between said gears; the dogs H pivotally mounted on the rock lever between said gears, said dogs extending outwardly from their pivots and adapted to engage said gears alternately at points more remote from the axes of the gear than the axes of the dog pivots; springs for forcing said dogs into engagement; and means for reversing the position of the dogs to reverse the direction of movement of the gears.

800,046. Speed Indicator. Nathaniel Young, Newmarket, N. H. Filed January 28, 1905. Serial No. 243,070.

Claim—1. In a speed indicator, a rotary shaft, a fixed sleeve, a second sleeve slidable thereon, a stud provided on the fixed sleeve, a barrel housed in the latter and connected for movement with the slidable sleeve, said barrel having a spiral groove engaged by the stud for rotating the barrel during longitudinal movement of the same, governor weights connected with the slidable sleeve and shaft and operable by the latter for moving the sleeve and barrel, a pointed operatively engaged with and movable by the barrel, and a dial over which the pointer moves.

800,112. Tire for Vehicle Wheels. Joshua



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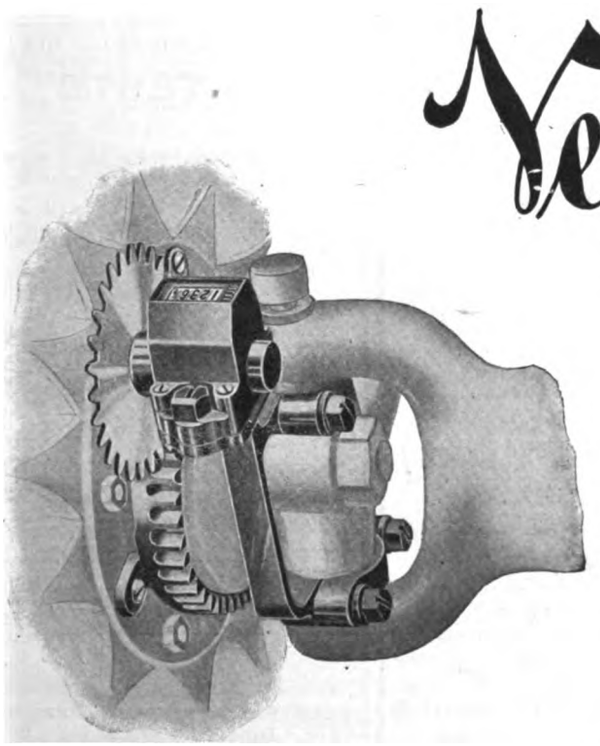
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BRISCOE MFG CO.

DETROIT, MICH., AND NEWARK, N. J.

W. Jones, Harrisburg, Penn. Filed December 30, 1904. Serial No. 238,948.

Claim—1. A vehicle tire embodying a tread surface formed of metal strip or wire extending around the tire, with projections thereon, the projections on adjacent sections being out of line longitudinally of the tire; substantially as described.

800,118. Control of Automobiles. Hermann Lemp, Lynn, Mass., assignor to General Electric Company, a corporation of New York. Original application filed January 14, 1904. Serial No. 188,958. Divided and this application filed January 13, 1905. Serial No. 240,870.

Claim—1. The method of stopping a self-propelled vehicle deriving its motive power from an electric generator driven by a prime mover, which consists in reducing the speed of the prime mover below the critical speed of the generator without stopping the prime mover.

800,128. Grid or Element for Secondary Batteries. William Gardiner, Chicago, Ill., assignor, by mesne assignments, to Universal Electric Storage Battery Company, a corporation of Delaware. Filed August 22, 1904. Serial No. 221,644.

Claim—1. An electrode for accumulators comprising a thin sheet of relatively pure lead provided with a plurality of closely arranged apertures extending therethrough, said sheet being folded transversely thereof into a plurality of folds, the walls of which are curved oppositely, forming single pockets, and the adjacent edges thereof being forced into close contact and integrally connected at a plurality of points intermediate the lateral edges of the sheet.

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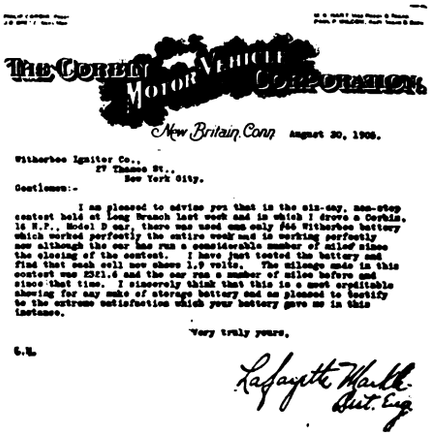
Not our claims but

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and

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such as this prove how thorough is the solution:



The Corbin Motor Vehicle Corporation.

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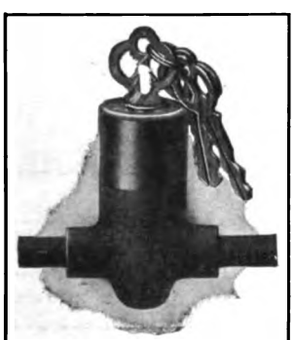
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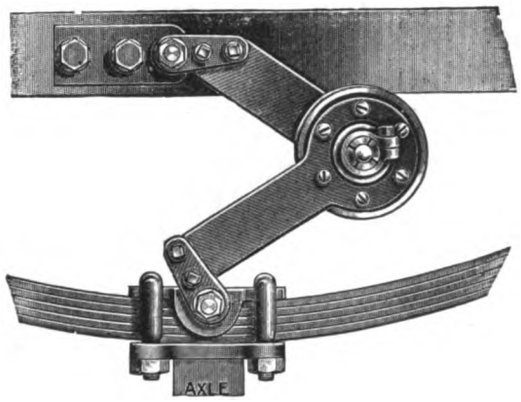
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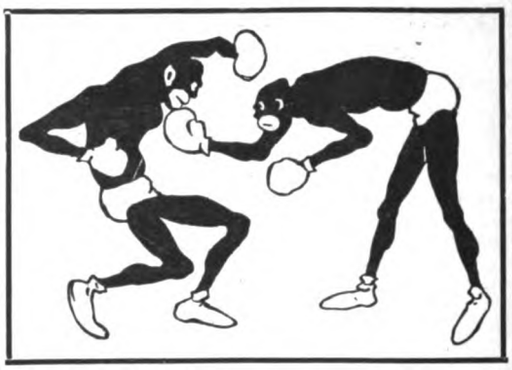
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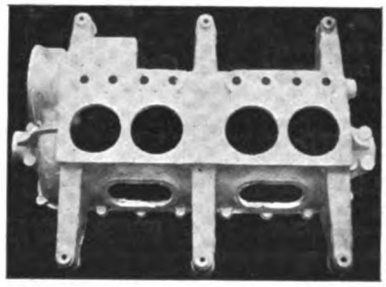
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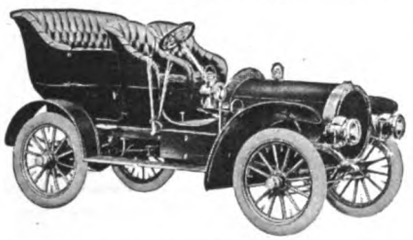
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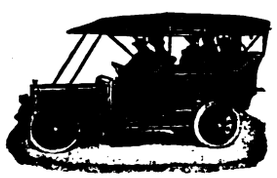
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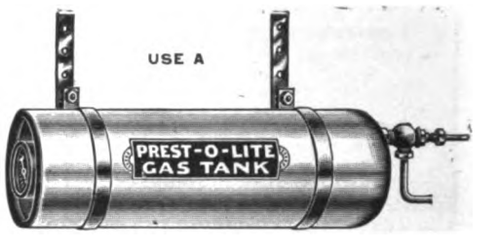


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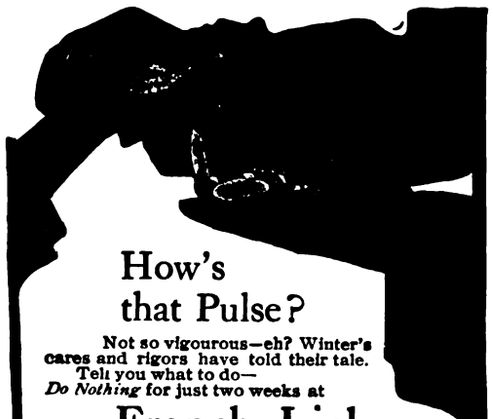
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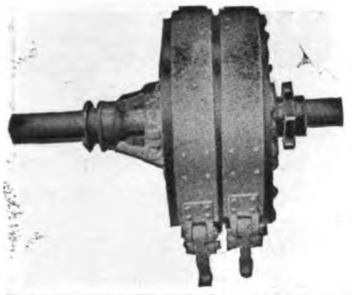
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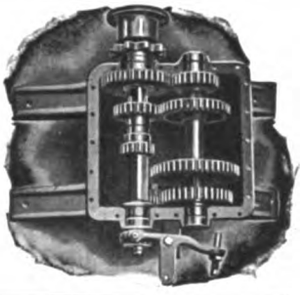
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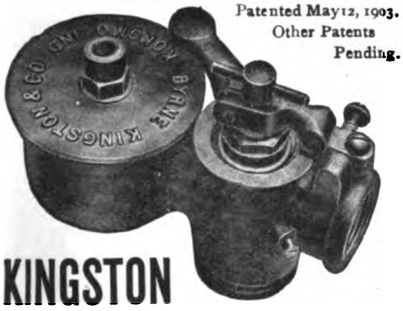
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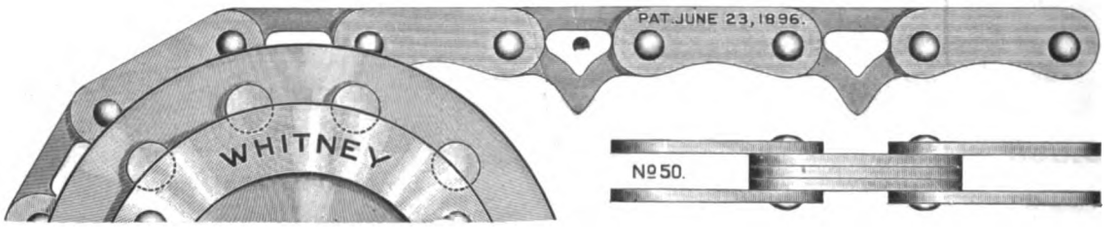
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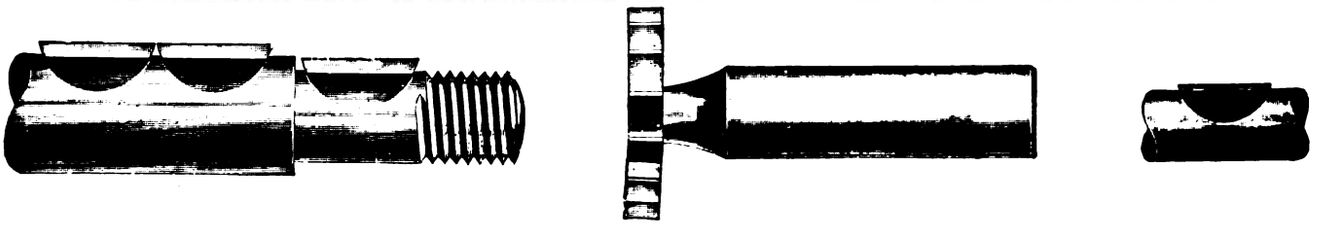
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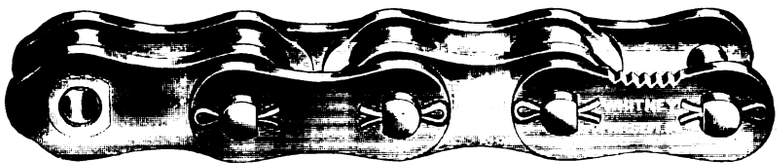
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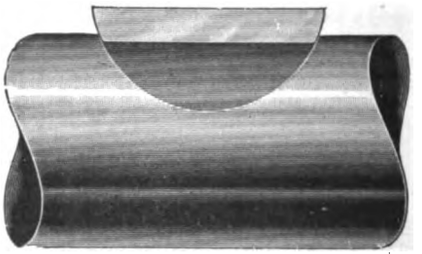
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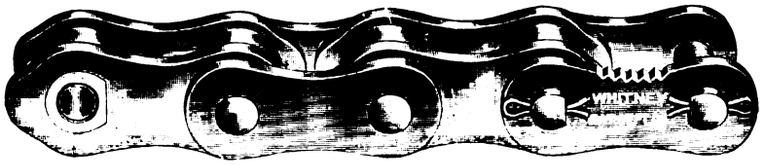












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We have hundreds of letters along the same line and names and other information will gladly be sent on request. If you are interested in a machine for business or family use write us for further information. By calling on our nearest agent, you can easily arrange for a demonstration, which is the most convincing argument we can present.

Send for Catalogue 53.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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DON'T EXPERIMENT
Just Sell
THE FORD

Mr. Agent:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the agent who sells a car not up to standard loses both *prestige* and *reputation*.

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown*.

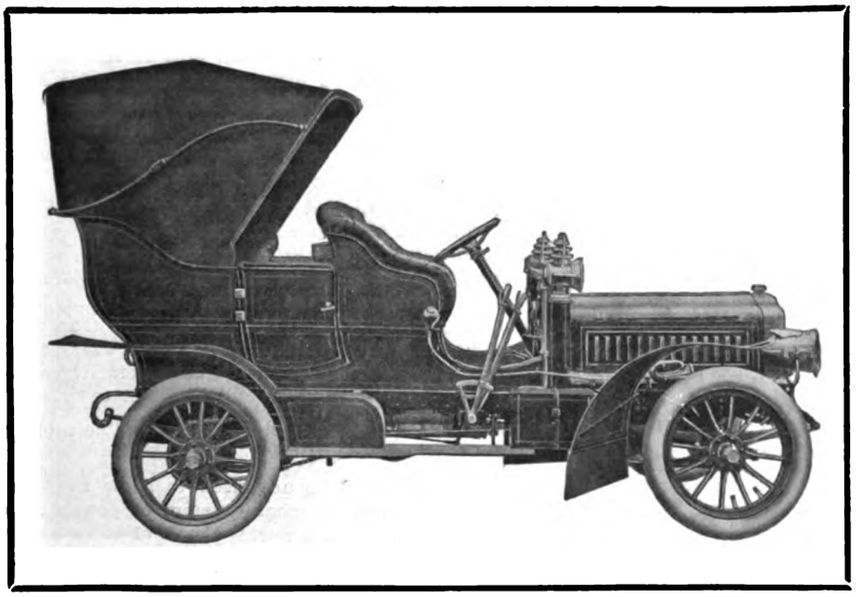
You know the general rush to the Ford exhibit at the shows, and how they all ask, *"What has Ford this year?"* plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before, except that there is certainly good business ahead for the Ford agent in 1906, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR COMPANY, ▪ ▪ ▪ Detroit, Mich.

MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO.

Canadian Trade supplied by THE FORD MOTOR CO., of Canada, Ltd., Walkerville, Ont.



TANNER & COMPANY,

AUTOMOBILES, MOTOR CYCLES, BICYCLES AND SEWING MACHINES.

NEW BEDFORD, MASS., September 2, 1905.

E. R. THOMAS MOTOR CO.,
Buffalo, N. Y.

Gentlemen:—Last October I purchased a 24 horse power Thomas Flyer from a Boston owner, who told me that it had been driven 10,000 miles during 1904. Since owning this car I have covered 21,000 miles in it personally, getting over $1700.00 from renting the same, and the machine seems smoother running to-day than ever.

I have carried six and seven people in it many times on trips forty and fifty miles. Better service could not be asked or given.

Yours very truly,
WM. E. TANNER.

COMMONWEALTH OF MASS.
New Bedford.
Bristol, ss.

{ L. S. }

Personally appeared the said Wm. E. Tanner and made oath that the above statement is true. Sworn to before me this second day of September, 1905.

CHARLES T. HERON,
Justice of the Peace.

E. R. THOMAS MOTOR COMPANY,

Makers of Thomas "Flyer" Automobile.

1210 NIAGARA STREET, - BUFFALO, N. Y.

Members A. L. A. M.

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The NEW Type XII, 35-40

POPE

PRICE $3,500

Some advance and interesting data on the LATEST and GREATEST achievement of the WORLD'S LARGEST AUTOMOBILE PLANT.

MORE POWER, MORE SPEED, MORE ROOM, MORE STYLE, MORE STRENGTH—LESS WEIGHT.

Every one in the trade **the world over** is now familiar with the unparalleled and unapproached record of the justly renowned **Pope-Toledo.** A few months ago we could not ourselves see that it was possible to produce a better car than that with which we **have won every notable speed, endurance and hill climbing contest.** But our wide experience, new methods, new and improved machinery, large quantities, and **above all the highly successful** culmination of experiments in **specially treated steels** which have been in progress for the past four years, have enabled us to produce in Type XII **a car that is a long step in advance** of our fondest wishes or expectations.

Motor Four Individual, Twin Head, Cylinders, 4-cycle Copper Jacketed, developing **under brake test 43** to 44 H. P. Water Cooled by the matchless Pope-Toledo Radiator. **All gears encased.**

In this space it is impossible for us to go into any deep exposition of the many points to be considered in producing the highest efficiency for the least weight in gas engine design. What has been accomplished in the Pope-Toledo in this respect might be tersely stated in the claim that in this now highly efficient motor **the very remarkable result** has been attained of **SECURING ONE H. P. FOR EVERY TEN AND EIGHT-TENTHS POUNDS OF WEIGHT,** and this, too, **without** in any sense **sacrificing** the **strength** or wearing parts. This proportion of weight to horsepower has not been achieved by any mere laboratory test, by running the engine at an impractical speed, but under the ordinary conditions which prevail.

Ignition Jump Spark, Coils and Batteries. Provision made for Magnetto. Control is simple, flexible and positive. The car can be driven **on high speed behind a team walking** or up to its maximum speed, **simply by the use of throttle and spark,** both located on the Steering Wheel.

Control The **Pope-Toledo** Engine has been developed to such a point of efficiency that we are now able to run it from 200 R. P. M. to 1200 R. P. M., at which point it delivers its greatest efficiency. It is not only exceedingly **quiet under all conditions,** but the use of a scientifically constructed Carburetor gives **great latitude of power** to the engine **at varying speeds.** Heretofore Carburetors have been generally adapted to deliver their greatest efficiency to the engine at a maximum speed. The Pope-Toledo Carburetor is developed to such a point of fineness that it is **self-adjusting** to all conditions of speed, so that **with the Spark and Throttle alone,** and always **on the high gear,** you can drive a Pope-Toledo **anywhere,** taking all ordinary hills without rushing them and without shifting gears.

Transmission Transmission is of the Sliding Gear type, three speeds forward and reverse, being **absolutely direct drive** on the high gear, with **no idle gears** in mesh. Ball bearings at all important points. The Transmission on Type XII **is one of our great forward steps,** mentioned above. The steel we use in this transmission, of **210,000 pounds tensile strength,** will play a most important part in the future development of the Pope-Toledo. True, it is very **expensive to make** and still more **expensive to work.** By its use we are enabled to produce not only the **lightest,** but the **strongest** and **most efficient transmission ever placed in any automobile.** This steel is of the finest quality, more expensive and harder to work than any used by any maker in Europe. While it is true that some of the European makers use some very fine steels, we do not hesitate to say that the steel herein mentioned is **superior from every standpoint,** which **we have proven** to our own satisfaction by **every known test** and by **actual experience** from using it in the cars themselves **under the most severe and arduous road conditions.**

Frame All steel Frame **of few parts,** tested to a safe load away above what is required. All steel, light, flexible and strong, making the car very **easy to ride in,** and **easy on both tires** and **engine.**

Double Direct Outside Chain Drive At this stage of automobile development but few arguments need be advanced to show that on the score of efficiency, which means **reduced friction, weight** and **durability,** the chain system of power transmission, **AS APPLIED TO LARGE AND POWERFUL TOURING CARS,** is a long way ahead of the Cardan Shaft **from every standpoint.** We give herewith a table of exhaustive tests conducted in France in the past year to determine this point.

It has been thoroughly demonstrated, and **engineers are agreed,** that bevel gears are not as **high** in efficiency as Spur Gears, and that Chain Drive shows **greater efficiency, longer life** and **less loss of power** than either Spur or Bevel gear. Recent French experiments on the efficiency of Bevel gears, Spur gears and pitch chains, as applied to motor cars, **prove beyond question** that **the chain drive is decidedly superior.** The results of these experiments are as follows:

	NEW	WORN
Roller Chain, Lubricated and exposed to dust	94%	92%
Bevel Gear, Steel on Steel, Running in Oil Bath	88%	82%
Spur Gear, Steel on Steel, Running in Oil Bath	92%	90%
Spur Gearing, Leather Pinion, Cast Iron Wheel	88%	80%
Spur Gearing, Steel Pinion and Fiber Wheel	88%	80%
Spur Gearing, Steel on Steel, greased and exposed to dust	90%	80%

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H. P., "Quiet-Mile-a-Minute"

TOLEDO

POPE Toledo AUTOMOBILES

FULLY EQUIPPED.

Chain drive is **decidedly** more **flexible** and **efficient, requires less care,** and on account of its flexibility, the motor and transmission and chassis are **not subjected to violent shock.** The matter of repair and replacement is **infinitesimal** as compared with bevel gears. You can tow a car with a broken chain, but you cannot do so with a broken bevel gear; and the older and more worn the gear the more power it consumes. Isn't it significant that in the elimination trials for the Gordon-Bennett Race, in which out of 70 or 80 cars the best three from each country were to qualify, that, notwithstanding **over 50% of the entries were shaft driven,** out of the entire lot **only one shaft-driven car was able to qualify.** In the race **this car was not able to even make a showing** against all the chain-driven cars.

Brakes The Pope-Toledo system of Brakes is incomparable. Both foot and emergency brake act on the hubs of rear wheels, which are very efficient and easily adjusted to wear.

Gasoline Capacity 17 gallons, sufficient for 270 miles—from ⅓ to ½ more mileage for the same quantity of gasoline **than any car in the world.** Gravity feed to Carburetor.

Axles The Axles on Type XII. are of the I Beam Type, FORGED IN OUR OWN PLANT of the best steel obtainable, being tested to **110,000 pounds tensile strength.**

Wheel Base 104 in.—Standard tread, 54 in.

Wheels 34 x 4, front and rear. We make all of our wheels here in our own plant. **All wheels spoked and assembled by hand.** Ball bearings of large dimensions.

Body Design Entirely new and original, along beautiful lines, distinguished and distinct. Double side entrance. Very large and roomy tonneau, **especially easy of access.**

Front Seat and Tonneau **Of Mirror Finished Steel,** large and comfortable front seat divided. Deep and heavy upholstering.

Hood and Guards Improved Hood, opening from either side. Guards oval shaped, **made of aluminum,** following curve of wheels. Front guards large and flaring.

Tires We shall adopt for regular equipment **the best tire on the market,** determined by observation and our wide range of experience. Rims also of standard sizes, admitting the use of any Foreign or Domestic tire.

Equipment Full set of lamps, horn, tools, floor mats, tire pump and jack. A very complete outfit **of the highest quality.**

Proportion of Horsepower to Weight Not further back than a year ago it was considered good practice to have 100 pounds of car weight to one horsepower. How much has been accomplished, not only **without the sacrifice of strength,** but by **actually increasing strength and durability,** can be best understood by stating that the new model Pope-Toledo has **ONE H. P. FOR EVERY 54 POUNDS OF WEIGHT.** It seems unnecessary to produce any arguments as to what this means. Certain it is that one of the chief points must be in durability not only to tires (which, of course, is a most important factor), but also to **all moving and wearing parts.** Experience and deep study of the entire subject of automobile building have demonstrated that to attempt to make a car strong by merely increasing the size and consequently the weight **of the parts,** not only **does not constitute strength,** but is actually **a source of weakness,** for the larger and heavier car is sure to contain within its weight **the germs of its own destruction.** We have aimed, therefore, to keep **the horsepower up** and **the weight down,** without for a moment losing sight of the importance of strength and safety.

Weight Distribution With the weight more evenly distributed in this new model than ever before, it must become evident to any one posted in the art that a great deal has been accomplished, not only for the **durability of the machine,** but **for the tires** themselves. The even distribution of weight and strength, aside from motor design, has probably received more careful study from us this year than ever before, and has only been possible through the wide knowledge we have gained from the thousands of our cars in use, and from whose performance we have been able to apply the proper result in the increase of power and reduction of weight, with increased durability and strength.

We also build Landaulettes, Limousines, and a Gentleman's Roadster of 20 H. P., four cylinders. **Special cars built to order of 20, 30, 35, 40, 50 and 60 H. P.** Further details given upon request.

20-25 H. P. DOUBLE SIDE ENTRANCE, - - -	$2,800
30-35 H. P. FRONT ENTRANCE, - - - - -	3,200
35-40 H. P. DOUBLE SIDE ENTRANCE, - - -	3,500
50-60 H. P., - - - - - - - - -	6,000

And upwards, according to specifications.

Pope Motor Car Co.
TOLEDO, OHIO.

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AMONG THE LEADERS IN ELIMINATIN' RACE.

Our regular stock model finishes third in Vanderbilt Cup Race trials. Just think what we are offering you this year. It is like this. You sit behind the wheel of a **ROYAL TOURIST** with one hand on the throttle lever. Move the lever an inch or so and you have an ideal vehicle, under perfect control, for city use or country touring. Move the lever a little more and you have a motor car fit to compete with the speed machines especially built for the **VANDERBILT CUP RACE.** Please bear in mind that the famous Royal that did so well in the race last Saturday is the same as the one you buy from us in every particular except, of course, you get a luxurious and handsome body, instead of a couple of tin seats.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 434 South Fifth St., Minneapolis; AUTOMOBILE SUPPLY CO., Limited, 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

"QUEEN"

The name stands for a line of cars that has no equal, either as a selling proposition for the dealer, or an investment for the individual buyer.

Staunch in construction, powerful in action, reliable in operation, and simple in control, Queen Automobiles best meet every requirement of automobile worth.

Queen Runabouts. Queen Det. Tonneaus.
Queen Touring Cars.

Made right and sold right by

C. H. BLOMSTROM MOTOR COMPANY,
Detroit, Mich.

C. A. DUERR & CO., Inc. 1787 Broadway New York City Agents.

GAS-AU-LEC

Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

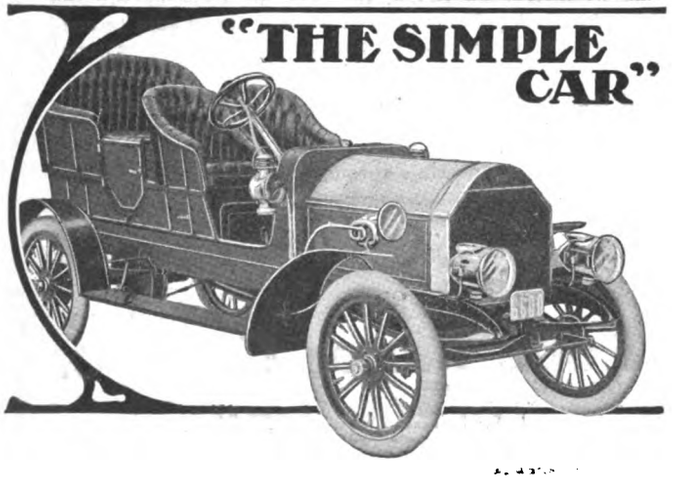
THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

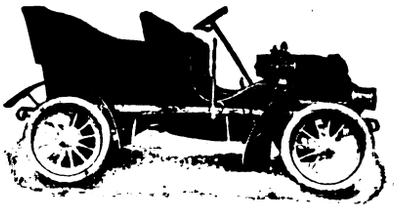
"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.



The 1905 YALE



Our contention is simple, plain, and easy of demonstration. We maintain that the 16 H.P. YALE at $1,000 and $1,100 and the 24 H.P. at $2,500 will deliver more power than you can secure from any other two cars in America, unless you are willing to spend $500 more.



Fit for a king's pleasure in beauty and luxuriousness with smooth, still engines whose loudest sound is a subdued hum—all we ask is that you submit them to to the most severe and trying tests.

You will, of course, want the catalogue as a preliminary, but we would suggest that you get in touch with our agent at once.

THE KIRK MFG. COMPANY,
950 Oakwood Ave., TOLEDO, OHIO.
Members A. L. A. M.

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We are ready to furnish 1906 models of our improved

Whitlock Coolers and Radiators

These embody all that is new and practical, combined with the greatest Durability, Efficiency and best Quality.

OUR RECORD

10,000 Coolers in Daily Use on Leading Cars.

Adopted in 1905 by the makers of the

Columbia, Thomas,
Napier, National,
Locomobile, Ford,
Pope, Royal,
Autocar, Packard,
Stevens-Duryea, Auto Vehicle,
Pierce

and many others.

1905 deliveries have all been made promptly, as agreed.

We make Radiators and Coolers of Every Description.

THE WHITLOCK COIL PIPE CO.,

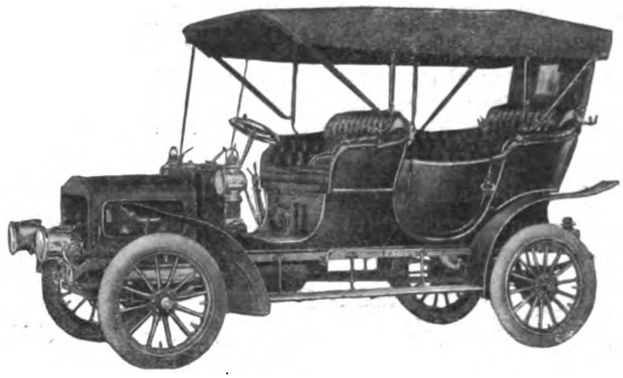
Hartford, Conn., U. S. A.

Sheet Metal Workers,
Brass Founders and Finishers.

The Incomparable

WHITE

The Car for Service.



The splendid reputation of the White steam car is based on a record of five years of successful performance in all reliability and endurance contests and of unequaled service in the hands of a host of private owners.

The new Model "F" White has met with the enthusiastic praise of all discriminating motorists. The new features include:

Graceful side-entrance body.
Long wheel-base.
Improved burner, giving added power.
Compensating brakes.

In order to appreciate its luxurious appearance and its unique smooth-running qualities, you should arrange for a demonstration. Write to us and we will put you in touch with our nearest agent.

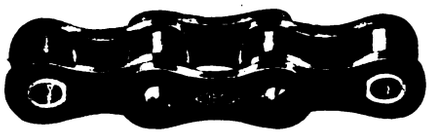
WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO.

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CHAIN DRIVE WINS

VANDERBILT CUP TRIALS



"DIAMOND" Chains were on the winning car in the eliminating trials for the Vanderbilt Cup. The second car to finish was also driven by "DIAMOND" Chains.

Both covered the course in about 22 minutes less time than the third car, which was gear driven.

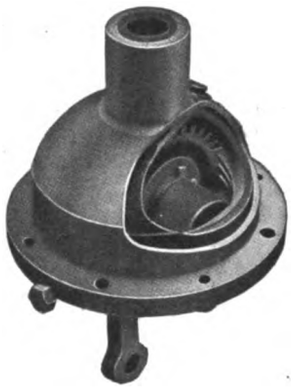
Judicious selection of materials and accuracy of manufacture account for the successful performance of "DIAMOND" Chains.

TRADE ◇ MARK.

When your old chain is worn out try a "DIAMOND." It fits any standard sprocket.

DIAMOND CHAIN MANUFACTURING COMPANY,
INDIANAPOLIS, IND.

BROWN-LIPE GEARS



Irreversible Steering.

Bevel and Chain Drive Differential.

Many Sizes and Models.

Sliding Gear Transmission.

PETERSON & DRAPER, 166 Lake Street, Chicago, Ill.
THOS. J. WETZEL, 11 Warren Street, New York.
} Direct Factory Salesmen.

CHAS. E. MILLER, 97 Reade Street, New York,
318-320 N. Broad St., Philadelphia,
202-204 Columbus Avenue, Boston,
406 Erie Street, Cleveland, O.
} Sales Agent Carrying Stock.

POST & LESTER CO., Hartford, Conn.. Eastern Sales Agents.

BROWN-LIPE GEAR CO., 200 S. Geddes St., Syracuse, N. Y.

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should ***not*** buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the ***two*** cycle two cylinder Elmore engine.

Understand—the ***two*** cycle two cylinder Elmore engine produces ***two impulses every time the fly-wheel turns.***

As you know, the two cylinder ***four*** cycle furnishes only ***one*** impulse every ***fourth*** time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St., Clyde, O.

AUTOMOBILE FORGINGS

NEW PLANT. NEW EQUIPMENT.

LARGER FACILITIES.

We are prepared to make estimates from drawings or models, and guarantee first-class work and deliveries according to contract.

Special and difficult drop-forgings a specialty.



HONEST WORK AT HONEST PRICES



THE M. SEWARD & SON COMPANY, New Haven, Conn.

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Glad to Get Back to Goodrich Tires.

Mr. H. C. Baxter, of Walpole, N. H., in a letter of Sept. 12, 1905, writes as follows:

"I am glad to get back to the use of your tires, after having satisfied my desire to test a foreign make, which I have found did not give me as good service on our country roads as yours, which I have used for years, have given me. I shall use your make in the future. At present I have a 24 h.p. Peerless, which I am using to make business trips between our canneries in New Hampshire and Vermont."

Yours truly, H. C. BAXTER.

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip Tread. Prevents slipping, slewing or skidding.



Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

THE B. F. GOODRICH COMPANY, - - Akron, Ohio

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
CHICAGO, 141 Lake St.
BOSTON, 161 Columbus Ave.
DETROIT, 80 E. Congress St.
CLEVELAND, 420 Superior St.
PHILADELPHIA, 909 Arch St.
DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.



WITHOUT AN "IF."

Diamond

SIDE WIRE SOLID TIRES FOR COMMERCIAL MOTOR VEHICLES

The rubber combines extraordinary durability and great resiliency, great toughness and elasticity.
The tires stay on.
They are made upon correct scientific principles. The rubber is practically impervious to wear.
The method of application is simple, safe, sure.
These tires are made in both endless and butt-end patterns.
Price lists with complete information pertaining to sizes for vehicles of different weights, channels, etc., will go forward the same day your letter reaches us.

THE DIAMOND RUBBER COMPANY,
AKRON, OHIO.

BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 No. Broad St.
BUFFALO—715 Main St.
DETROIT—310 Woodward Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
NEW YORK—78 Reade St.
SAN FRANCISCO—608 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
CLEVELAND—223 Huron St.

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G&J

Motor Car Tires

are

Resilient—Speedy
Economical—Safe

EASY TO HANDLE

Get Our New Tire Manual.

G&J TIRE CO.
Indianapolis,

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

ALL SIZES CARRIED IN STOCK

Henry G. Morris. Alfred Wilmarth.

Morris & Wilmarth,
Stocks, Grain, Cotton and Coffee,
32 Broadway,
New York.

MEMBERS
NEW YORK STOCK EXCHANGE
NEW YORK COFFEE EXCHANGE
NEW YORK CONSOLIDATED EXCHANGE
CHICAGO BOARD OF TRADE
BALTIMORE CHAMBER OF COMMERCE.

TELEPHONE 2538 BROAD.
PRIVATE WIRES TO
CHICAGO AND MILWAUKEE.

BRO. OFFICES
1128 BROADWAY, N.Y.
181 MONTAGUE ST., BKLYN.
134 SO. 4TH ST., PHILA., PENN.

New York, July 22nd 1906

Mr. C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.

H. S. M. - G.

THINK IT OVER

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request

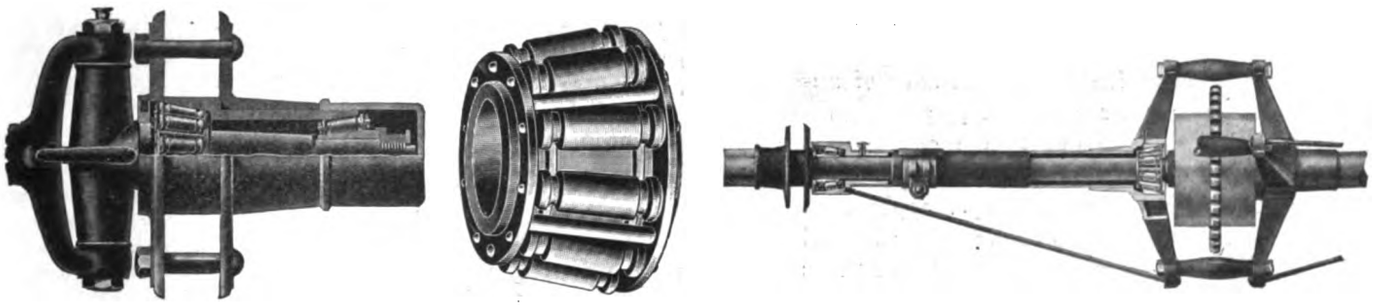
CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 38th St., New York. 318 & 320 N. Broad St., Philadelphia, Pa. 202 & 204 Columbus Ave., Boston, Mass. 491 Erie St., Cleveland, Ohio

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Much of the satisfaction resulting from the use of Timken Roller Bearings is due to the simplicity of construction,—few parts and every part a special feature.

We think this explains why it is easy to sell so many of them and why owners of machines demand them.

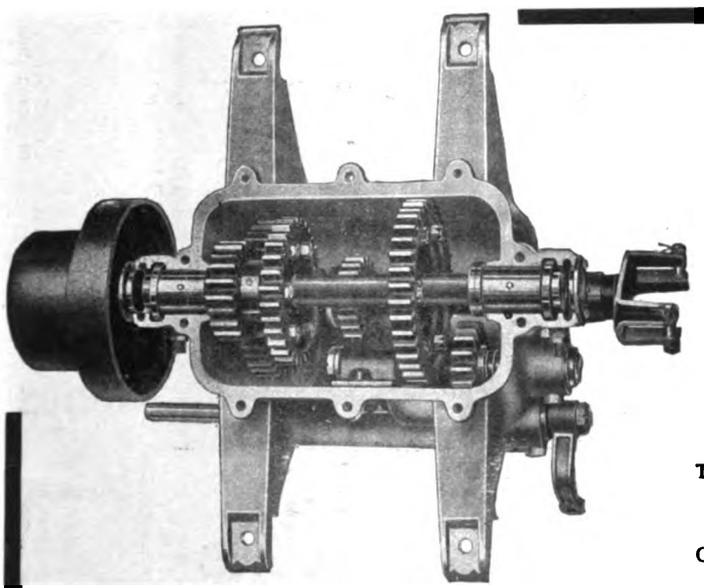
A good automobile is no stronger than its weakest part. Can you afford to have anything but Timken bearings?

Positive adjustment. No loose parts. Perfect end thrust and you can take up the wear.

All types front and rear axles, Lemoine or Elliott knuckles, direct and chain drive rear axles, truck axles, wheels, channel rims.

TIMKEN ROLLER BEARING AXLE CO.

Main Office and Works: CANTON, OHIO.



GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.
Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE, Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube
FRONT AXLE, I-Beam Section Nickel Steel Bed, Ball or Plain Bearing
CHANGE GEAR STEERING GEAR CLUTCH
DISTANCE ROD AND BRACKET PROPELLER SHAFT LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 H. P.
Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 H. P.

Write for Circular No. 12.

THE GARFORD COMPANY, - - - Elyria, Ohio.
Sales Manager: Hayden Eames, Cleveland, Ohio.

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Parts for 1906 Automobiles:

For the convenience and assistance of automobile builders we have prepared complete drawings of our 1906 model pressed steel frames and frame members, and other parts, which will be mailed upon application. We are prepared to build pressed steel frames, change gears, front and rear axles and other parts in any quantity for early delivery.

STEEL STAMPINGS:

We make a specialty of steel stampings of all descriptions, including hubs, parts, brake drums, etc.

STEERING WHEELS:

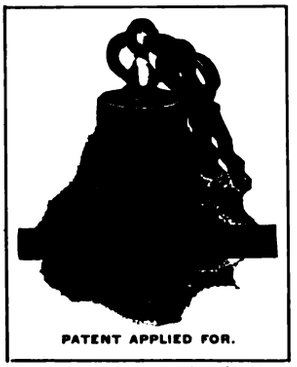
Another specialty of ours—we make the best steering wheel rim on the market, and a large variety of spiders for application to any steering column.

Send for our Steering Wheel circular

A. O. SMITH COMPANY

Milwaukee, Wisconsin.

No More Borrowing Cars Without Owner's Permission



PATENT APPLIED FOR.

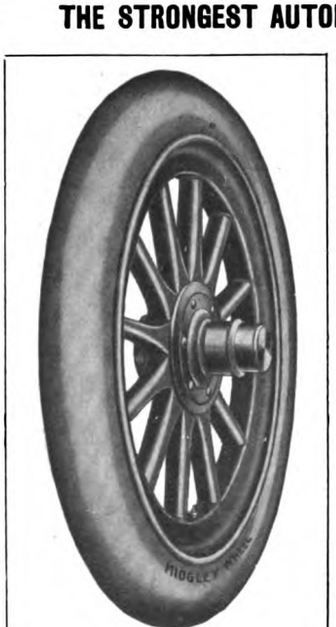
The Hill Lock Valve

(here shown), is a new device and a good one. It is connected at any convenient place in the gasolene pipe and when locked and the key withdrawn prevents the gasolene from flowing to the carburettor and consequently the engine cannot be started. The key cannot be taken from the lock until the gasolene supply is entirely shut off—when shut off keep the key in your pocket. Impossible for anyone to steal your car. Your fuel supply is **locked,** but your car can be pushed to the wash-stand for cleaning, or into the street in case of fire. It is a small device made entirely of brass and turned with a "special key"—no two keys are alike. The lock is of the finest grade, it has five tumblers and cannot be picked or opened without the "right" key. Three keys are furnished with each lock. The locks are perfectly tight, being tested by gasolene under a pressure of one hundred pounds. It is made for all sizes of pipe from the smallest motor-cycle or launch to the most powerful touring car. Price, $5.00. **Special price to Supply Houses and Automobile Manufacturers.** Apply to your supplyman or garage. If not found in stock, address

E. HILL, Jr.,

Norwalk Iron Works Co., SOUTH NORWALK, CONN.

MIDGLEY
Artillery Pressed Steel Wheel
IS
THE STRONGEST AUTOMOBILE WHEEL MADE.



THE ONLY WHEEL that will always remain absolutely true.

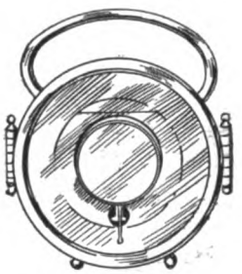
THE ONLY WHEEL that does not require care and attention.

THE ONLY WHEEL that will withstand hard usage, even abuse.

THE ONLY WHEEL that will not shrink, warp or swell, thereby eliminating resetting rims and other annoyances.

Write for Catalogue.

THE MIDGLEY MFG. CO., Columbus, Ohio



The absolute best in Motor Lamps

THIS

SOLAR PARABOLENS HEADLIGHT

throws most powerfnl beam of any lamp made, yet burns cool. Simple, safe and sure, no better lamp can be built. The most your dealer will say about the next best is that it is "just as good as a SOLAR"—but why not buy th **standard** and dodge the second best.

We stand back of every SOLAR lamp with a guarantee to **you**—a warranty that leaves no room for risk on the buyer's part. You can't buy better lamps—whether oil or acetylene.

Write for booklet—or ask your supply man.

BADGER BRASS MFG. CO.,
Kenosha, Wis.

NEW YORK OFFICE 11 Warren Street.

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Exceptional Opportunity to Purchase a BARGAIN.

Several cars used for demonstrating purposes at our factory, branches and agencies, are offered at alluring prices—if sold—**quick.** Choice of our different models is given.

These cars are perfect in every respect, but cannot truthfully be called brand new cars. Quick action on the part of an intending purchaser will result in a big bargain, coupled with the lasting satisfaction for which the "Haynes" is famous.

Write us at once.

Haynes Automobile Company,

Kokomo, Ind.,

Member A. L. A. M.

New York Chicago

Watch the representation of

MICHELIN TIRES

in the real

VANDERBILT CUP RACE.

MICHELIN

builds tires for men who know.

Race drivers ought to know something about tires.

Most of them use MICHELIN.

The world's greatest races have all been won on MICHELIN Tires.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

6 West 29th Street, New York

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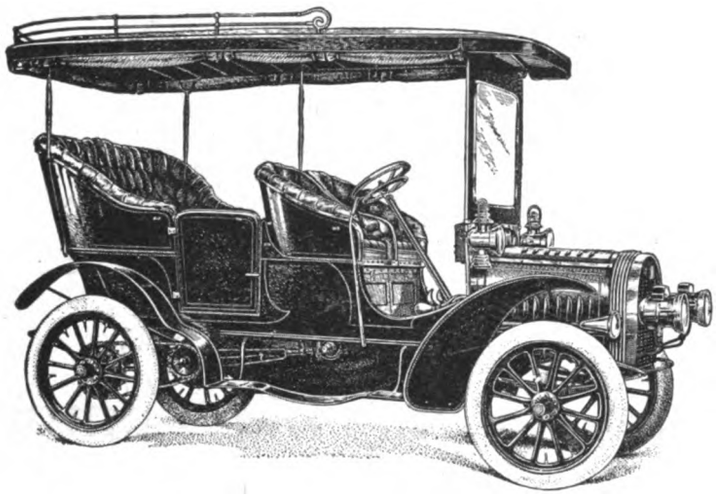
E. D. WINANS, General Manager

BRANCHES.

Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
Philadelphia, 322 No. Broad Street.
Washington, 1330 New York Ave., N. W.
San Francisco, 807 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street.
Pittsburg, 5903 Centre Avenue.
Utica, 12-18 Lafayette Street.
Poughkeepsie, 14-20 Catherine Street.
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
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Morristown, N. J., 1 South Street.

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Rambler



$1650

The comfortable Surrey, Type Two, for those who ride at night

The long, wide body, with extra large tonneau, contributes greatly to the ease and enjoyment of the evening drive or theatre party.

The canopy top, with swinging glass front and water-proof side and back curtains that can be rolled down and fastened to the car, affords perfect protection to the occupants in cold or stormy weather.

Any speed desired from three to thirty miles per hour can be made with sufficient power always at command for ascending ordinary grades, with full load, on the high gear.

We are now demonstrating these cars for the benefit of prospective buyers, and practical road tests will be made for those who call at any of our branches.

THOMAS B. JEFFERY & COMPANY, Kenosha, Wis.

BRANCHES:
CHICAGO, MILWAUKEE,
BOSTON, PHILADELPHIA.

New York Agency,
134 W. 38th St.

REPRESENTATIVES IN ALL LEADING CITIES.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, October 5, 1905. No 2

POPE'S LINES FOR 1906

Two Strikingly New Cars Included, One of Them Amazing Value for the Price.

The Pope announcement for 1906, which was made this week, uncovered two strikingly new models—a Pope-Hartford with a four-cylinder vertical motor of 28-30 horsepower, listing at $2,500, and a Pope-Tribune with a two-cylinder vertical engine, at $900. Both cars have double side entrance bodies, and the Tribune, one of which is already on exhibition at the New York branch, is by long odds the biggest and most pretentious car that has yet appeared at such a low price.

The Pope-Hartfords of this year, the horizontal single cylinder at $750, and the two cylinder horizontal, at $1,600, will be retained in the line, as also will be the Pope-Tribune single cylinder vertical runabou at $500.

The Pope-Toledo line will include one new model, Type XII, of 35-40 horsepower, at $3,500. It will be lighter, stronger, roomier and more powerful than any of this year's cars. The remainder of the line will be made up as follows: 20-25 horsepower, double side entrance, $2,800; 30-35 horsepower, front entrance, $3,200; 35-40-horsepower, double side entrance, $3,500; 50-60-horsepower, double side entrance, $6,000. The $3,500 car previously was of 30-35-horsepower.

Rambler Branch in 'Frisco.

Hereafter Thomas B. Jeffery & Co. will themselves handle the Pacific Coast. They have discontinued their agency arrangement and are about to establish their own branch in San Francisco, which will have charge of the States of California, Oregon, Washington, Nevada and Arizona. The branch will be in charge of L. H. Bill, of L. H. & B. I. Bill. The firm will be continued as before, and will remain distributors of Kokomo tires, Solar lamps and Veeder odometers.

Supply Concern is in Straits.

William Ewig, the Heil Rail Joint Welding Co., and the Western Malleable and Grey Iron Mfg. Co., all of Milwaukee, Wis., have filed an involuntary petition in bankruptcy against the Western Auto Supply Co., also of Milwaukee. The amount of the claims filed by the petitioners is $559 75. No receiver has been appointed. The Western Auto Supply Co. is located at 285 Virginia street. The petition recites that the company admitted in writing on September 23, 1905, that it was unable to pay its debts.

Royal to Get Selden License.

The Royal Motor Car Co., Cleveland, is about to enter the Selden fold, that is, the Association of Licensed Automobile Manufacturers. All the preliminaries have been arranged, and only signatures and payment of the initiation fee remain to complete the negotiations. It is understood that provision has been made whereby unlicensed dealers who have closed Royal contracts for 1906 will be protected.

Exports Top Two Million Mark.

With the eight months ending with August last export returns have topped the two-million mark, or an increase of fully 100 per cent since 1903. The total for the period in question in the latter year was $1,049,311; for 1904, $1,322,499, and for the present year, $2,041,134. For the month of August alone the difference is not so great, being $168,303, and $260,853 for 1904 and 1905, respectively.

Massachusetts Dealer's Fatal Accident.

W. E. Tanner, of W. E. Tanner & Co., New Bedford, Mass., was killed near Syracuse, N. Y., on Friday night last, while returning from a visit to the Thomas factory. He failed to see a double turn in the road, with the result that his car upset and he was thrown against a big rock and his skull crushed.

White to Open in Philadelphia.

The White Sewing Machine Co. is preparing to establish a branch in Philadelphia, under the management of E. C. Johnson. As he has been for some time connected with the Quaker City Automobile Co., the former agents for the White, Johnson will not be a stranger to his surroundings.

Jess Draper, formerly of Peterson & Draper, Chicago, and one of the best known men in the trade, has become sales manager of the Wayne Automobile Company, Detroit.

RADICAL SHOW REFORMS

A. L. A. M. Eliminates Some Eye Sores and Nuisances—Trade Tickets Also Abolished.

There will be no horn tooting, no souvenirs and no "Price, $1,000" or "Sold to Mr. Pierpont Vanastorbilt" tags at the "Sixth National Automobile Show at Madison Square Garden," which, by the way, is the manner in which the Association of Licensed Automobile Manufacturers designate their show in the first piece of their printed matter that has seen the light.

These rather radical decisions are laid down in the rules and regulations that will govern the exhibition which were issued this week. They are not, however, the only departures from established customs that will prevail. The abolishment of "trade tickets" and coupon admission books, the shortening of the hours of free morning admission to dealers and requiring that they shall first obtain a special card, good for one morning, only, are all in the nature of new moves that are as of prime interest as are those relating to horns and souvenirs.

The language of the altered regulations that have been promulgated is as follows:

"No exhibitor shall assign, sublet or apportion the whole or any part of the space allotted to him, nor exhibit therein any other goods than those of his own manufacture or that he sells in his regular course of business.

"No decorations, furniture or drapery will be permitted in any exhibition space, except such as is provided by the show committee.

"No counters, fixtures or other structure will be permitted in any exhibit unless it shall be sanctioned by the show committee in accordance with the general scheme of decoration and use of space.

"The Garden will be open from 11 a. m. to 11 p. m. to the general public.

"All coverings of exhibits must be removed by 10 o'clock a. m. each day.

"Badges will be provided by the management for each exhibitor and a reasonable number of employes necessary for the proper conduct of the business connected with the exhibit, which will admit them to the Garden

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building at all times during the week of exhibition. These badges will be furnished on written application to the show committee, giving in detail names and duties of the persons for whom application is made. Each badge will be numbered and registered, and in case of loss a new badge will be issued only on payment of $5.

"In case of transfer of badge, the same will be taken up and considered forfeited.

"The price of admission tickets will be 50 cents each; no trade or other underprice tickets will be sold to any one, nor will any coupon admission books be issued.

"Before 11 a. m. the hall will be open only for exhibitors, employes and dealers. Special cards of admission, however, will be issued to dealers in automobiles, tires and accessories on application for same at the public bureau of information in main lobby (good for one day only) for admission before 11 a. m. only.

"All horns exhibited, whether as the equipment of an automobile or as an accessory, must have the reeds removed therefrom.

"No advertisements, cards or signs of any character, other than those officially provided by the show committee, will be permitted in any exhibit. No 'price' or 'sold' card can be displayed on any automobile or other article exhibited.

"No advertising or printed matter, which, in the opinion of the show committee, is undignified or otherwise objectionable, shall be distributed.

"The distribution of souvenirs of any kind by exhibitors is prohibited."

Big Demand for Tops.

The demand for tops was one of the remarkable developments of the last season which promises to be exceeded only by the call for them for 1906 use. Practically all of the top manufacturers report a rushing state of affairs, the London Auto Supply Co., of Chicago, stating that the early orders for their styles have attained such surprising proportions that it appears not wholly impossible that despite their facilities a "waiting list" may have to be established.

Winton Adopts Hill Oiler.

One of the earliest of the 1906 surprises to be uncovered is the adoption of the Hill precision oiler by the Winton Motor Carriage Co. It is a big feather in the cap of the Steel Ball Co., of Chicago, who market the Hill device, as it signifies that for it the Winton people have discarded and swept aside the results of all of their expensive experiments with lubrication systems, which have extended over a long period of years.

Barnes Moves Up a Peg.

Claire E. Barnes has been elected secretary of the Detroit Steel Products Co., of which he previously was sales manager. He will, however, continue to fill the latter position.

The Week's Incorporations.

Kittery, Me.—Atwood Mfg. Co., under Maine laws, with $40,000 capital; to manufacture lamps. President and treasurer, W. Q. Atwood.

Quincy, Mass.—The Griswold Mfg. Co., under Massachusetts laws, with $25,000 capital; to deal in automobiles. President and treasurer, Robert G. Griswold.

New York City, N. Y.—William Roche Dry Battery Co., under New York laws, with $25,000 capital. Corporators—E. A. Lowe, Conrad Milliken and F. W. Conger.

Two Rivers, Wis.—Wisconsin Automobile Supply Co., under Wisconsin laws, with $5,000 capital. Corporators—A. M. Farrell, Joseph Koenig and W. S. Bremer.

Passaic, N. J.—Greene Motor Car Co., under New Jersey laws, with $100,000 capital; $20,000 paid in. Corporators—Raymond A. Greene, Edward A. Greene and William L. Clark.

Los Angeles, Cal.—The Golden State Motor Car Co., under California laws, with $500,000 capital. Corporators—J. Hauerwaas, C. F. A. Last, J. Singer, R. M. G. Phillips and F. M. Townsend.

St. Joseph, Mo.—St. Joseph Automobile Co., under Missouri laws, with $2,000 capital, all paid in. Corporators—W. P. Fulkerson, E. A. King, E. P. Snowden, B. J. McGuire and F. F. Fulkerson.

Schenectady, N. Y.—American Locomotive Automobile Co., under New York laws, with $300,000 capital; to manufacture automobiles. Corporators—W. A. Parker, G. H. Montague and G. H. Tower.

New York City, N. Y.—Benedict Mfg. Co., under New York laws, with $60,000 capital; to make gasolene engines. Corporators—Paul C. Benedict, Maud E. Benedict and Mary J. Benedict.

Augusta, Me.—Gearless Transmission Co., under Maine laws, with $500,000 capital; to manufacture and deal in automobiles. Corporators and officers—President and treasurer, Q. L. Fairbanks.

Boston, Mass—Mills-Kennedy Co., under Massachusetts laws, with $25,000 capital; to deal in automobiles. Corporators and officers—President, Edward P. Kennedy; treasurer, A. Ernest Mills.

Knoxville, Tenn.—The Scarborough Co., under Tennessee laws, with $20,000 capital; to sell automobiles, supplies, etc. Corporators—W. W. Scarborough, Charles E. Shultz, C. W. Henderson and Cowan Rodgers.

Buffalo, N. Y.—Buffalo Automobile Body & Trimming Co., under New York laws, with $25,000 capital; to make automobile bodies, seats, etc. Corporators—Louis C. Beesing, John A. Heslop and William F. Beesing.

Seattle, Wash.—The Puget Sound Auto Co., under Washington laws, with $50,000 capital. Corporators—T. F. Ryan, George B. Kittenger, William Gottstein, G. H. Bartell, Ferdinand Schmitz, George Z. Dantz, A. W. and W. H. Heinzerling.

New York City, N. Y.—The Hudson Automobile Co., under New York laws, with $5,000 capital; to manufacture and deal in automobiles. Corporators—Ferdinand Schussler, Harold A. Wright, Estelle Schussler and Moses G. Wright.

Oswego, N. Y.—Barnes Gear Co., under New York laws, with $50,000 capital; to manufacture steering gears and appliances for automobiles. Corporators: Charles O. Barnes, Marcia Q. Barnes, Thomas Moore, Charles A. Bentley and Fred. V. Mardock.

Roche Becomes a Corporation.

William Roche, the veteran dry battery manufacturer, has converted his business into a stock company, which was last week incorporated under New York laws as the William Roche Dry Battery Co., capital $25,000. Mr. Roche is the president of the new corporation. C. Laton Ford, formerly first vice-president Celadon Roofing Tile Co., New York, is treasurer; Ernest A. Lowe, president the Lowe Electric Co., is vice-president, and William C. Hubbard, for a number of years with the Westinghouse Electric & Mfg Co., is secretary. The business will be continued at the old address, Nos. 52 and 54 Park Place, New York.

Imports Show Big Increase.

According to the figures of the Appraiser for the Port of New York, 119 automobiles were imported into this country during last month, as compared with only 72 in September, 1904. The total importation for the nine months ended with September was 772 cars, as against 435 during the corresponding period of last year.

Baldwin Experimenting with Motors.

Experiments are now being carried forward with gasolene engines in the oldest home of the steam engine in this country—the Baldwin Locomotive Works. They are being made with the purpose of designing cars for Western railroads similar to those now in use by the Union Pacific.

Tire Covers in All Colors.

The Gilbert Mfg. Co., New Haven, Conn., who were among the very first to market dust, sun and waterproof tire covers, have made a move that will still further enhance the saleability of their product. They are now making the covers in colors to match the finish of practically any car.

To Remove the Springfield Plant.

Columbus (Ohio) capitalists have purchased the title, goodwill and business of the Springfield Automobile Co., Springfield, Ohio, and will move the equipment to the former city. C. C. Bramwell will remain with the company in the capacity of superintendent.

Hathaway gets Lowe's Place.

Josiah Hathaway has succeeded to management of the White Sewing Machine Company's branch in Boston, made vacant by the resignation of the veteran George E. Lowe.

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HERE'S A NICE LITTLE LEAGUE

Sells Cars, Repairs Tires, Gives Advice and Does Every Other Old Thing for "25 per."

Quite the roomiest thing that has come to life in New York during recent months recently established its "main office" on Thirty-third street. It styles itself the Auto Protective League—"auto," by the way, signifies "self"—and it is so roomy that if it does one-half of what its printed matter says it will do, or can do, most of the legitimate and illegitimate dealers in America and all of the automobile associations may as well put up their shutters.

Although the league, which holds a New York charter, says "the corporation has established many stations in many parts of the country," only the address of its "main office" is given. This "main office" comprises two rooms in a dwelling house, and the "headquarters staff" at the time of the Motor World man's visit was composed of one man and a boy. Despite the fact, the "league" is well departmentized. Here are some of them:

"Discount department," "garage department," "help department," "legal department," "license department," "transportation department," "insurance department," "touring department," "renting department," "auditing department," "sales department," "novelty department," "tire repair department," "technical department," "foreign department" and "publishing department."

For a modest $25 per year any one may obtain a "certificate" entitling him to the services of any or all of these departments. There was nothing to indicate of which particular departments the man or the boy has charge. But the "technical department," for instance, will "examine cars, free of charge, and give mechanical advice," while the "tire repair department" has "made special arrangements for the repairing of tires by a new and economical vulcanizing system." The "sales department" will "sell and dispose of member's cars without charge," and the "publishing department" will supply any of the automobile papers at cut rates—exactly how it is to be done is not stated. The Motor World, for one, has no arrangement with the "league."

Ambitious as are these plans, they do not tell the whole story of the aims of the "league." The man at the "main office" let fall that "when they have their clubhouse they will probably have a permanent international exhibition of all the prominent makes of accessories."

So far as is ascertainable, the "league" consists of R. E. Jarrige, president, and Stephan Kjeldsen, secretary and treasurer. Mr. Jarrige has figured in the incorporation of several other automobile ventures. Mr. Kjeldsen figured in the newspapers only last week for being arrested twice in the same day for alleged scorching. His "league's" "legal department," which "extends reasonable protection, aid, assistance and advice," was evidently not in full working order at the time, as on the first occasion he was compelled to deposit his watch as bail and for the second alleged offence to leave the car itself as security.

In the Retail World.

J. W. Wilcox has embarked in business at No. 116 East Ninth street, Los Angeles, Cal. He will handle the Maxwell cars.

Frederick Zoll has purchased a half interest in the automobile business of Horner Kelley, Findlay, Ohio, and will take an active part in looking after the affairs of the firm.

The Butler Motor Car Co., of Boston, Mass., has taken the agency for Eastern Massachusetts for the line of commercial vehicles made by the Rapid Motor Vehicle Co. Pontiac, Mich.

The Palace Automobile Garage has opened for business at Seventh avenue and One-hundred-and-twenty-fourth street, New York. The building is of two stores and basement, 50 by 100 feet.

The Big Thunder Mfg. Co., of Belvidere, Ill., who manufacture sewing machine fittings and other specialties, are installing a department for the care and repair of automobiles. They will also carry a line of accessories.

The Frayer-Miller Motor Car Co. is the title of a distributing agency for that car which has just been established in New York in charge of H. H. Knepper; it will take care of the States of New York, New Jersey and Connecticut.

Glens Falls, N. Y., will now have an automobile garage, Miller Bros., the Monumental Square dealers, having decided to build one on the land they have leased at No. 16 Maple street. It will be a fireproof building, one story high, 50x50 feet.

Herbert Austin has purchased the business of L. J. Wyckoff, at 484 Broad street, Newark, N. J., and will open a garage. Associated with him will be Charles Krebs. Both Austin and Krebs have been in the bicycle business a number of years.

The Decauville Automobile Co., New York, which heretofore has devoted itself to imported cars, has found it expedient to take on an American line. Accordingly it has secured the agency for the Franklin in Greater New York, Long Island and Fairfield County, Conn.

The Van Dusin Motor Car Co., of Birmingham, Ala., which has taken over the business of the White-Blakeslee Co., First avenue and Twentieth street, will erect a garage on Fourth avenue, between Twentieth and Twenty-first streets. Its dimensions will be 100x50 feet and its cost $10,000.

George H. Cox, formerly with the Pope Mfg. Co., has "signed" with Thomas B. Jeffery & Co. He will cover the Central West.

WILL SLICE CHICAGO'S "MELON"

N. A. A. M. Votes to Share Profit With Exhibitors and Stifles Endurance Run Rumors.

All those exhibitors at the Chicago show of February next who have exhibited at at least one previous N. A. A. M. show will have returned to them a pro rata share of the net profits of the function.

The Motor World's urging that some such distribution of the "melon" was desirable, in view of the fact that both of the New York shows are to be conducted on the profit sharing plan, and particularly as the National Association of Automobile Manufacturers had no use for its share of the proceeds, bore fruit at the meeting of the executive committee of that organization in New York yesterday. George W. Bennett, of T. B. Jeffery & Co., took the initiative in the matter by introducing the following resolution:

"Be it resolved, That as soon after as possible in the forthcoming Chicago show the association shall rebate to all those exhibitors who hhall have exhibited at a previous show held under the auspices of the N. A. A. M. one-half of the net profits of the association of the February, 1906, show. Such rebates shall be pro rata to the space occupied and the amount paid for it."

The resolution was promptly seconded by Charles Clifton, of George N. Pierce Co., and was carried without opposition. It means that a substantial sum will be returned to the exhibitors. Last year the net profits of the Chicago show approximated $30,000, of which the manager received one-third and the N. A. A. M. the remainder. It is the N. A. A. M.'s share that will be distributed among the exhibitors.

At yesterday's meeting it also was formally decided that there will be no endurance contest this year, which disposes of rumors of an event to occur in November.

The New York School of Automobile Engineers asked for the loan of parts for use in instructing its pupils, but no action was taken on the application.

Mr. Clifton reported that he appeared before the Freight Classification Committee and asked for more favorable rates on automobiles.

Oil on Garage Sidewalk Leads to Law.

The Palace Automobile Station, Hartford, Conn., has been made the defendant in a rather unusual suit. A dressmaker in passing the station slipped and fell, sustaining a fractured knee-pan. She charges that her fall was due to slipperiness of the sidewalk, caused by oil drippings, and believes that $1,000 will be about the proper balm for her wounds.

Garden Ends his Long Exile.

R. D. Garden, than whom few men in the retail world are better known, is coming back to New York. He has resigned the management of the Quaker City Automobile Co., Philadelphia, to become manager of the Harrolds Motor Car Co., which latter concern will hereafter devote itself exclusively to the Pierce line in New York.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident-Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintainance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 784-786 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 826 Arch St.
ATLANTA, 105 N. Pryor St.
SYRACUSE, 426 So. Clinton St.
BUFFALO, 806 Main St.
CLEVELAND, 815 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS, 3606 Olive St.
OMAHA, 1116 Farnam St.
KANSAS CITY, 1220 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St
LOS ANGELES, 1084 So. Main St.

HERE'S ANOTHER HOT ONE

from a Western Dealer who, for obvious reasons, wishes his name withheld.

CADILLAC AUTOMOBILE CO.,
Detroit, Mich.

Gentlemen:--

We have noted with interest your fable on "Tale of Twisted Prices" in the current issue of Motor Age. We were in a position to see the point without the use of a microscope. In fact, we got stung a little ourselves; but that was a trivial matter in our estimation as compared with the effect on some of our good customers. Now, we do not feel that it will be a good thing for us to walk up to the stinger again, and we are seriously considering the advisability of making some other line our leader for 1906, and the particular object we have in writing this letter is to inquire whether you would, under any circumstances, consider a proposition to cut out a certain amount of territory now handled out of ------ and ------ and make a direct contract at this place.

The above dealer is a good one and has sold a large number of cars, has taken good care of his trade, maintained the prices which the maker had fixed for him, but, with what result? Can any honest dealer square himself with his trade when placed in a like position? We doubt it. Cadillac dealers can face everyone of the 3,700 owners of 1905 single cylinder Cadillacs and honestly say:—"The Cadillac prices were right at the beginning, they are right now and will be next year."

CADILLAC AUTOMOBILE CO. - - Detroit, Mich.

Members of Association of Licensed Automobile Manufacturers.

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☞Those who are interested in motor vehicles will find the facilities and information of our office always at their command.

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NEW YORK, OCTOBER 5, 1905.

Manipulation of the Clutch.

In the handling of a motor car, aside from the function of steering, which at all times is in the hands of the gods, the most sensitive and delicate skill is required in the manipulation of the friction clutch. Whether it be of the common variety of leather faced cone or of the newer type of multiple disk, there is in its use a demand for a nicety of skill and a precision which alone may well be taken as a measure of a driver's ability.

Among the abuses of the friction clutch, the most common is that of engaging it too suddenly, and it is one to which all drivers are liable at one time or another. Its direct effect, supposing that there is no mechanical provision to insure gradual engagement between the working surfaces, is that of striking a heavy blow which penetrates to every portion of the machine, racking it as can nothing else, and straining it as can no other action, not even excepting the effect of running into a stone wall.

When the clutch is let in too quickly one of two things usually happens, either the engine stalls at once and without a whimper, or else something breaks; sometimes very many things break. It may be argued that when under such circumstances any part or parts fail, it is the fault of the designer, since no matter what occurs there cannot originate more than a certain amount of force in the engine, a force which is known to the designer, if not to the public—namely, the maximum power of the engine. But the designer is not of necessity at fault in such a case, since the force is applied so suddenly that it partakes of the nature of an abrupt shock, and hence parts which are amply strong in withstanding a steady pull of the maximum amount may yield to impact.

In the case of touring cars, it usually happens that when the clutch is let in suddenly the motor stalls without doing any injury to itself or to any of the mechanism, but in the case of a racing machine, in which the factor of safety has been effaced from the calculating sheet and all parts are fined down to the limit of essential strength, the effect is quite apt to be more destructive.

When the driver of a powerful car which had been picked to finish well up in the recent eliminating trials on Long Island attempted to start by letting in his clutch too fiercely he was but following an illustrious precedent, and his accident was one the like of which has marred nearly every competition in the history of the sport in which high powered cars have participated. The Renault machine, of which so much had been expected in the Bennett race this year, was similarly put out of the running of the Ardennes Circuit, and numerous other examples of a similar nature have occurred.

Whether in that particular case the driver made an error in judgment in attempting to start too quickly and to accelerate at a rate which was beyond the capacity of the machine, or whether the car itself was structurally weak, matters little; the result remains unchanged. The accident in itself, however, may well be used as a lesson to all drivers, and from it may be drawn a moral worth taking to heart—namely, that the acceleration of a moving body require time, and that the force required to accelerate is in direct proportion to the time, and, conversely, that to attempt to force matters involves the penalty set forth in the oft proven addage, "Haste makes waste."

Roads and the Commercial Vehicle.

Despite the great flow of the good roads enthusiasm and the immense amount of missionary work which is being done at the present time through the press and by actual canvass from house to house, one might almost say, the fact remains that this country is not now equipped with a rightful measure of passable highways, and that it is not likely to become so equipped to any great extent within the space of many years.

The growth of the motor car movement, wholly apart from this fact, though correlated with it basically, comes on apace, and is rapidly assuming gigantic proportions, and the most pertinent question of the day in this connection is, How can the automobile movement continue its progress, particularly in its commercial branch, while hampered as it is by the thousands of miles of poor and mediocre roads over which all traffic except that which is distinctly urban must pass? It is a question that not all of those vitally concerned have put squarely to themselves.

From the standpoint of its present state of development, and taking into consideration the rate at which the motor truck and the motor 'bus are coming into prominence, it is evident that before many years the limit of its applicability will have been reached, unless some system can be developed whereby it will be possible for vehicles carrying heavy loads to get from one town to another without serious loss of time, and without any possible danger of delay on account of mishap due to adverse highway conditions.

By this is meant, not that within a few years, other things being equal, all heavy motor vehicles will have been disposed of in the urban communities which are ever to be so placed, nor that the market will have been clogged within so short a time, but simply that the greater proportion of possible buyers will have been supplied, and that on that account the market will have ceased to increase at its former uncertain rate, and will have settled down into a sort of rut, the bulk of the industry being devoted to the maintenance of existing types of vehicle and to supplying those buyers who are increasing their rolling stock. That is to say, the number of new buyers will in time cease to increase, and will after a further time commence to diminish, without the industry suffering any material loss—a phenomenon which is to-day being exhibited in the touring car market. After that time the increased use of motor vehicles for heavy duty, and for light pleasure duty as well, will be more rational, and will follow directly along the lines of the achievements of those which are already in service.

When that time shall have come, and pending the millennium of good roads, there will be an eddy in the current of progress, unless

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it be found possible to circumvent the difficulty of getting from centre to centre by machines. At present over the greater portion of the country freight which is to be transported a distance upward of one hundred to one hundred and fifty miles is given over to the tender mercies of the railroads. It is safe to say that never will they be supplanted where greater distances are involved. But when it becomes possible to transport merchandise by motor car in comparatively small amounts, carrying it with dispatch and surety over distances within that limit, and when this haulage can be performed at a cost less than that charged by the railroad corporations, then will the motor car come into its own.

In the mean time practical usage is demonstrating beyond a doubt in every city in the land that the motor vehicle is adapted to all of man's uses for transportation. It is being embraced with increasing enthusiasm by nearly all who have the enterprise to give it a trial, and still it is practically confined to town and suburban uses. What is to be done pending the development of the highway? is the great question, and What is to be the effect of the heavy motor vehicle on the existing roads which are called "good," according to the present standards of judgment? For there be those who say that even the best of roads cannot withstand the tremendous loads which are destined to come with the development of mechanical traction. The assertion in itself is, however, but a sniff at a science which dates back to the time of Cæsar, and is unworthy of consideration. A good road, rightly made, will carry any load which is likely to be put upon wheels, at least until times have changed greatly.

It has been suggested that all roads which are likely to be subjected to heavy traffic of the sort referred to be equipped with steel wheelways of the nature of flat rails with ridges at the sides to prevent the wheels from running off, and that the cost of laying them would soon be returned in benefits derived from the system. Another suggestion is that, instead of steel, cement ways, or rails, be used, the great durability and low cost of the latter material arguing well for its utility in this connection. And in this connection also has come a proposition to construct such roads under regular railway franachises, the term "rail" not being defined by law in such a manner as to preclude the possibility of forcing a right of way over property not willingly ceded for the purpose, and to control and concede the right of use according to a system analogous to that of the toll road.

At the present time a movement is on foot to organize a corporation with this in view, the proposal being to construct a broad roadway with a pair of concrete rails or depressions on either side for the use of heavy vehicles, and to include between them a strip of smooth concrete pavement which shall be for the use of the lighter traffic. According to the scheme, the company owning and controlling the right of way would also own and operate a line of freight and pasesnger vehicles over it, letting out the privilege of use to other parties according to a fixed schedule

Notwithstanding the fact that the toll road pure and simple is a relic of barbarism, and that its existence to-day is a disgrace to those parts where it still is to be found, there is little room for doubt that a roadway constructed for a specific purpose in the manner suggested, wholly apart from the regular highways of the community and exclusive of the ways used for purposes of animal traction, might prove of great advantage to all users of mechanically propelled vehicles, as well as a source of considerable revenue to the promoters. And that it might serve the end of aiding in the development of the commercial motor car, not by way of a finality, but rather as a means of tiding over the period which must elapse before the common highway will be adapted to the needs and uses of all, seems a rational conclusion.

Rules of the Wrong Sort.

Why is it that the automobile enthusiast, the man who has the best interest of the car and its owner as well as its builder at heart, who, on the whole is a most conservative individual brimful of common sense under ordinary circumstances, becomes little short of idiotic when entrusted with the formulating of rules for a contest? It is a query that must remain unanswered, but the fact remains, nevertheless. The latest event to suffer at the hands of such temporary irresponsibles is the Tourists' Trophy, an international event organized in England in token of British deprecation of road racing and primarily for the benefit of the public and the maker. It was expressly stipulated that every entrant should be a touring car pure and simple, but the very precautions taken to prevent the running of racing freaks were productive of what was sought to be guarded against.

The regulation limiting the fuel supply to one gallon for every twenty-five miles was sound, but that limiting the weight proved to be far from it. The fact that the car capable of propelling the greatest weight over that distance on a single gallon of fuel would be making an unusually favorable showing was seemingly never considered. The absurdity of some of the expedients resorted to may be realized from the following excerpts from an account of the start: "Thus there was Frederick Coleman, who had practically ruined two White steam cars to get them down to weight in a competition he could not hope to win, because it was common knowledge that the allowance was insufficient for a steam car. A 1906 model Clement came up to the line with a frame drilled to the semblance of a sieve. The 18 horsepower Siddely, now fitted with racing wheels, shod with tires that put the observer in mind of cycling. Two competitors appeared, each at the wheel of a Thornycroft, with a papier mache bonnet and pedals that had been peeled till they looked like mere pimples. A cardboard covered Dixi," is the description accorded the latter competitor.

Comment upon the idiocy of compelling the entrants to resort to such expedients in a contest held primarily for the purpose of enlisting public confidence in the capabilities of the "stock touring car" the quotations are ours, would be supernuous.

The recent contest for the Herkomer trophy held in Germany affords another instance of the abortiveness of such performances when common sense rules are not adhered to. The prize was to be awarded to the "best touring car," plainly an arbitrary classification extremely difficult to make and apt to differ in the case of each individual owner. In order to comply with this condition it was necessary to award the prize to the most luxuriously fitted car that attained a perfect score in other respects, a result that means about as much to the average man wishing to buy a car as does that of the shorn and cardboard covered entrants in the English affair. American makers may congratulate themselves on having such a common sense event as the Glidden Tour in which to participate.

Evidently the American Automobile Association is "waiting for something to happen" before prohibiting the appearance of women in speed contests. After one of them has been killed or maimed, the resulting public outcry probably will awaken the organization to a sense of duty.

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GERMANY DRAWS No. 1

Gets Choice of Starts in Cup Race—Nearly All Contestants Now on the Course—Two of Them Are "Pinched" and Chevrolet Wrecks His Car.

Camille Jenatzy, one of the German team, will be the first driver to have the word "Go!" shrieked into his ear on the morning of the Vanderbilt race. This was decided at the drawing for positions to determine the order of starting in the Vanderbilt Cup race on October 14, which took place at the rooms of the Automobile Club of America, New York City, Monday night, 2d inst. The order will be Germany, France, America and Italy. Naturally, this important detail attracted a large and representative attendance of men interested in the trade and directly and indirectly interested in the race.

The allotment of team places was decided by a double drawing, the representatives having the first honor. Robert Graves, representing the German team, drew first and got No. 1. Next Baron Adrian de Turckheim pulled out No. 2 for the French team; E. R. Hollender, for Italy, drew No. 4, and last A. L. Riker drew No. 3, for America. In the second drawing, by which it was determined in what order the teams should start, Robert Graves again drew No. 1 and De Turckheim secured No. 2, Mr. Riker drew No. 3 and Mr. Hollender the last. It was left to the teams themselves to decide in which order the cars would start, and after some little consultation it was announced that Jenatzy, the only real German on the team, would start first; Duray, for the French team, followed by Dingley for America and then Lancia of the Italians. The full table of the positions in which the cars will be sent off on the morning of the 14th is given below.

At the meeting it was given out that Baron de Caters, who entered a Mercedes as one of the German five, had cabled his withdrawal. S. B. Stevens, of Rome, N. Y., who holds a membership in the German club and owns a 90 horsepower Mercedes, offered to take De Cater's place on the German team, and he was accepted by the commission. Campbell will drive the car.

One of the F. I. A. T. cars entered for the Italian team was put out of the race early Monday morning by Louis Chevrolet, its driver. The accident happened at 7 o'clock in the morning on the road between Lakeville and Hyde Park, about a quarter of a mile south of the Vanderbilt estate at Lake Success. Chevrolet was giving his car an early morning try-out over the course. A heavy mist hung over the road, making it impossible to see any great distance. Chevrolet was going at high speed, and where the road bears to the right failed to keep his car in the road and crashed into a telegraph pole. He was thrown out uninjured, but his mechanician, Henry Schutting, sustained three broken ribs. The 110 horsepower car was completely demolished, necessitating a change in the make-up of the Italian team. Major C. J. S. Miller offered his 90 horsepower F. I. A. T., which Chevrolet used on the track this season, and it also was accepted by the racing board. Chevrolet will drive.

There is still another vacancy to be filled, and it occurs in the German team. Clarence Gray Dinsmore, the American who prefers Paris to New York, arrived in this city this week, and stated that he had not been able to get his Mercedes from the factory, and consequently he had withdrawn from the contest. It is likely that H. L. Bowden's 90 horsepower Mercedes, with Charles Basle at the wheel, will be substituted.

All the foreign "cracks" are now in this country, and most of them are on Long Island training. Hémery and Wagner, the Darracq drivers of the French team, are quartered at Glen Head, having engaged the Glenwood in its entirety. Hollender & Tangeman have leased Pourrier's establishment, including the hotel, garage and outbuildings, for Lancia, Nazzaro, Cedrino, Chevrolet and Sartori, the F. I. A. T. drivers. It is situated midway between Garden City and Hempstead. Heath (Panhard), Szisz (Renault) and Duray (De Dietrich), the other members of the French team, are quartered at Mineola.

Working in conjunction with the Nassau County authorities, Chairman Robert Lee Morrell of the A. A. A. racing board has decided to discipline all the drivers who are caught exceeding the speed limit over the course after working out hours, which are supposed to be before breakfast in the morning. A trap was set on the Mineola straight this week. It is a measured eighth mile, finishing directly in front of the grandstand, and Justice George C. Tatem has been holding court all week. Many tourists who were tempted to "let 'er out" a little on the oiled course were nabbed. Joseph Tracy, the Locomobile driver, was the first of the "cracks" to be nabbed. He fell into the clutches of Patrolman August Seigert, who swore he was going forty miles an hour. Tracy, who was en route to Bridgeport, Conn., was taken to Jamaica and fined $25. Duray, the De Dietrich, driver, was also "pinched," and Baron de Truckheim went his bail at Mineola. The officials expect to reap a harvest before the day of the race.

Much speculation is being indulged in regarding the outcome of the cup race, and just who are the favorites would be difficult to determine. Many think the Italian team will be in front at the finish, some are inclined toward the German and French teams, while others are certain one of the American big trio—White, Lytle or Tracy—will win.

Lancia, the Italian, is a daring driver, inclined to the spectacular and willing to take all kinds of risks, while his team mate and close friend, Nazzaro, is dignified and supercareful, very much like Tracy, the American. Lancia will start fourth, and his headstrong impetuousness may carry him to victory. Jenatzy, of the German Mercedes team, resembles Mephistopheles, and is absolutely without fear. Withal he is careful, and even warns the sparrows from the road while practising on the course. Chevrolet, Cedrino and Sartori, the three F. I. A. T. drivers, are well known to Americans by their performances on the tracks. Chevrolet and Cedrino drive with ease, quite the reverse of Sartori, who is not expected to make a good showing.

Hémery, who is to drive one of the 80 horsepower Darracqs, has been in the racing game several years, his most notable performance being his victory in the classic Ardennes circuit at Belgium in August last. His team mate, Wagner (Darracq), also has a good record. Duray is a blond young man, and looks more Gallic than Saxon. He finished sixth in the international cup race, second in the Florio, third in the French trials and seventh in the Ardennes circuit. Szisz, the Renault crack, handles his car perfectly. George Heath, the remaining member of France's picked team, is best known as the winner of last year's Vanderbilt contest. He is an American by birth, but has taken up residence in France. A 120 horsepower Panhard is his car.

Besides Jenatzy, on the German team are Campbell, Werden, Keene and Basle, the lat-

THE ORDER OF STARTING.

Start.	Driver.	Car.	H. P.	Team.
1.	Camille Jenatzy	Mercedes	120	Germany
2.	G. Duray	De Dietrich	120	France
3.	Bert Dingley	Pope-Toledo	60	America
4.	Vincenzo Lancia	F. I. A. T.	110	Italy
5.	John B. Werden	Mercedes	120	Germany
6.	Louis Wagner	Darracq	80	France
7.	Joseph Tracy	Locomobile	90	America
8.	Felice Nazzarro	F. I. A. T.	110	Italy
9.	A. L. Campbell	Mercedes	90	Germany
10.	Francois Szisz	Renault	100	France
11.	Walter Christie	Christie	60	America
12.	Emanuel Cedrino	F. I. A. T.	110	Italy
13.	Foxhall Keene	Mercedes	120	Germany
14.	George Heath	Panhard	120	France
15.	Herbert H. Lytle	Pope-Toledo	70	America
16.	Louis Chevrolet	F. I. A. T.	90	Italy
17.	—— (To be named)	——	——	Germany
18.	M. Hémery	Darracq	80	France
19.	Walter White	White	40	America
20.	Paul Sartori	F. I. A. T.	90	Italy

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CHERVOLET'S WRECKED CAR AND SCENE OF THE WRECK

ter, however, not having been decided upon as yet. Campbell is scarcely known, although he has participated in a few track races. He is an American, and will drive S. B. Stevens's Mercedes. Foxhall Keene, the well known turfman, is naturally superstitious, and wants the racing board to change his number, 13. Werden has some reputation abroad as a driver.

Since the racing board exercised its prerogative and substituted the White, Pope-Toledo and Christie cars in place of the Thomas, Haynes and Royal, the American team is receiving strong support. Bert Dingley (60 horsepower Pope-Toledo), who won the elimination trial, will start third. Joseph Tracy, in the 90 horsepower Locomobile, will be the second of the American team to start, and will be sent off seventh. Naturally Tracy has a large following. It is expected that Lytle's experience in the elimination trial, when he put his car out of the running by changing gear too quickly, will be a lesson to him in the big race. The big Pope-Toledo ought to be well up at the finish. Notwithstanding its misfortune in the trials, the 40 horsepower White is gaining backers every day. Walter White goes over the course every morning, and prefers not to take changes before the race and is driving very carefully. At that he is covering the 28.2 mile circuit in something like 32 minutes. As the unlimited speed capabilities of "Whistling Billy's" sister car are well known, she may well be counted as a potent factor. The White will be next to the last car to start, but it is a long and good chase from the rear. Instead of Robertson, Walter Christie will handle the Christie car.

The cars will be started from Mineola as near 6 o'clock as possible, Saturday morning, 14th inst., at intervals of one minute.

New Jersey Clubs Get Together.

New Jersey automobilists have followed the example set successively by New York, Massachusetts and Illinois, and is the fourth State in the Union to form a State Automobile Association, organization having been perfected last week. The object of the new State association, which will be known as the Associated Automobile Clubs of New Jersey, as embodied in the constitution, set forth a desire to conduct a social and protective organization of all persons in New Jersey interested in motor pleasure vehicles; to unite against unjust and unreasonable legislation, and to maintain the rights and privileges of automobilists generally. Frederick R. Pratt, of the New Jersey Automobile and Motor Club, of Newark, was elected president, but no other officers were elected until all the clubs in the organization can be canvassed. Eight clubs, with a membership of about 1,200, are included in the organization as follows: New Jersey Automobile and Motor Club, Newark; Automobile Club of New Jersey, East Orange; Hudson County Automobile Club, Jersey City; North Jersey Automobile Club, Paterson; Monmouth County Automobile Club, Ashbury Park; Mercer County Automobile Club, Trenton; Cape May Automobile Club, Cape May, and Atlantic City Automobile Club, Atlantic City.

Squire Klem Catches Willie at Last.

William McNichol and the touring car belonging to his father, James P. McNichol, of Philadelphia, are in trouble at Magnolia, N. J., thanks to an all summer campaign of 'Squire C. F. Klem, of that burg, who has been keeping tabs on Willie and the car for many weeks. Willie has the high gear habit, and though Squire Klem could not get him every time he oversped the limit, he kept faithful count, with the result that when at length the lad did fall into his clutches he owed the town just $250. When arrested on October 1 William was in a hurry to make an engament in Atlantic City, and would undoubtedly missed it had not his brother Charles been right behind in another car, who, after a brief and stormy scene, posted back to Philadelphia to see the old man and get the dollars. All Magnolia is going to see the trial.

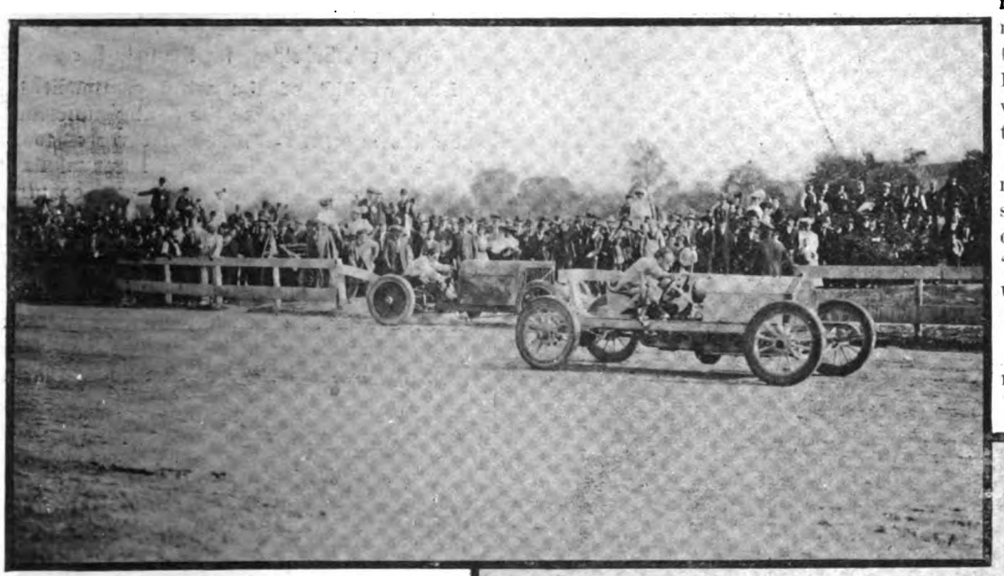
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OLDFIELD PLUNGES INTO A FENCE

He and a "Heroine" the Centers of Photography at the Poughkeepsie Meet.

Barney Oldfield, in his 60 horsepower Peerless, fondly named by himself the "Green Dragon," dashed into a fence at the Poughkeepsie (N. Y.) meet on Saturday last, 30th ult. The fence was demolished, and Oldfield was carried off in an ambulance, which had been held in waiting for that very occasion.

OLDFIELD IN HIS FENCE SMASHING ACT.



Neither Oldfield nor his car was injured, however. The fence was constructed of cardboard, the whole "accident" having been prearranged for the immediate benefit of the moving picture machine man and for the ultimate profit of Oldfield and his theatrical managers.

Oldfield is out to corral the largest amount of negotiable coin he can—he himself long ago acknowledged it—and some time back his manager hit upon the happy scheme of having his "star" come before the limelight on a real stage during the long winter months. So Barney is to run his Peerless car on a treadmill arrangement and run thrilling races with himself for the benefit of those who never have had the opportunity of seeing the automobile "crack" whirl around the track in clouds of dust. To make the act in which Barney is to star seem more ralistic it is planned to have the cinemetograph reproduce on the screen pictures of Oldfield plunging through a fence. So this, the Poughkeepsie meet, was the chance for the photographer to execute his little part.

It was the last day of the Dutchess County Agricultural Society's fair, and, as last year, it was designated "automobile day." Perfect Indian summer weather, little dust on the track, the presence of nearly twenty thousand spectators and such stars as Oldfield, Cedrino, Wurgis, Wridgway, Mrs. Joan Newton Cuneo—there were a few more, but perhaps they will not be offended if their names are not mentioned—thrilling feats by a pair of diving equines and a female aeronaut, the aforementioned "accident," the "ten, twent', thirt'" shows on the pike, with numerous counter attractions thrown in, served to make this last day of the seventieth annual fair a red letter one in its annals.

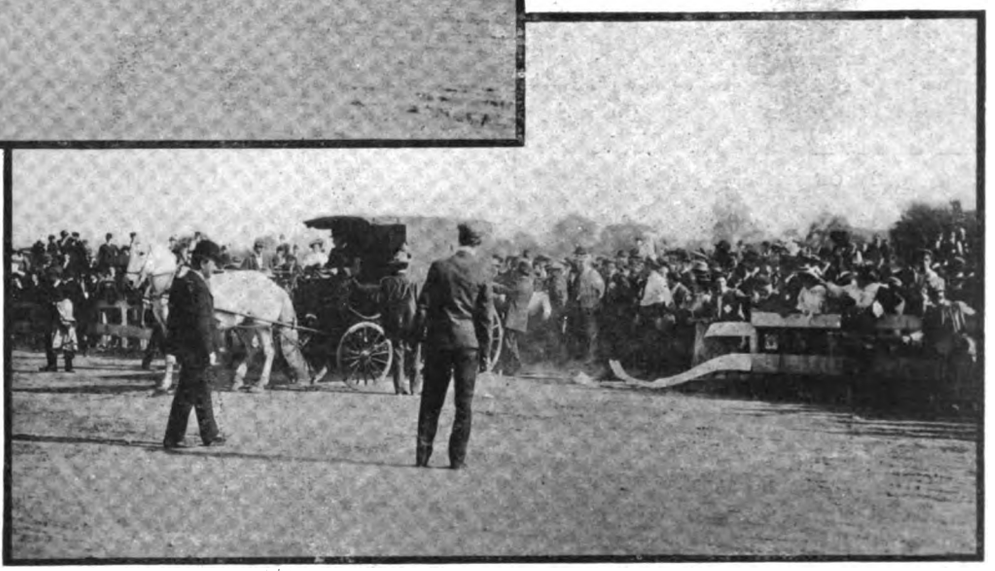
The meet was sanctioned by the American Automobile Association, and one of those peculiar championship races was not the least of its features. The "championship" event was at five miles, and Oldfield, in his 60 horsepower Peerless, won out handily, although to all appearances Dan Wurgis, 32 horsepower Reo, gave him a hard tussle for the honors. Charles G. Wridgway, former 1,000-mile record holder, in a 35 horsepower Peerless, finished third. Oldfield's time was 5:50 3-5. Then Oldfield thrilled the crowd by driving a five-mile exhibition in the fast time of 4:47 3-5, after which he took his car around the one-mile oval in 57 seconds. Then followed Oldfield's fence smashing and property blood shedding act, after the successful culmination of which his day's work was o'er.

For the occasion a section of the post and rail fence that inclose the infield had been replaced by a pasteboard structure. The moving picture machine and its operator occupied another car, from which the tonneau had been removed. This car ran along the track in front of and a little to the outside, while Oldfield in his Green Dragon, the habitual cigar stump in his mouth, came scorching down the course, with C. G. Wridgway in a Peerless running just a length behind, to represent his competitor. Just before the place for the accident was reached Oldfield wobbled his car skilfully a couple of times. Following the suggestion of the photographer the crowd, or that part of it which understood, waved hats and handkerchiefs, and nearly every one of the spectators was grinning as Oldfield crashed through the paper fence. As the car went through the fence Barney threw up his heels and rolled backward from his car in a fall realistic enough to guarantee his stage career.

Just then the photographe.'s assistant rushed up and daubed Oldfield's face with a sponge that had been soaked in red ink. Evidently Barney had not counted on such a "bloody" accident, for he was heard to ejaculate:

"What t'ell!"

But he had no time to make further cursory remarks, for by this time the hired-for-the-occasion ambulance came bounding up the track, its gong pounding as if the driver wanted its noise to get into the picture, and Oldfield was placed on the stretcher, which was included with the ambulance. One of the "cops" was so anxious about how he would appear on the screen of the theatre that he kept his face turned toward the camera and did not look whither he went. This caused him to stumble and nearly drop the grinning corpse. Arrived at the ambulance there was a hitch. The cops at the head of the stretcher wanted Barney put in feet first, while those at the feet end did not want to turn about. There was a brief pause for an argument. Finally Barney was pushed in

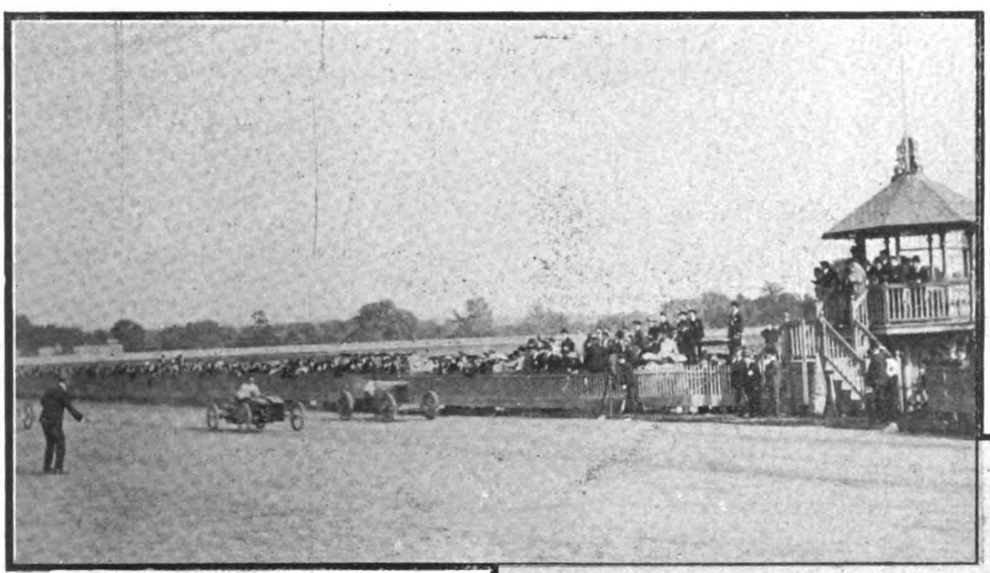


LOADING THE "VICTIM" INTO THE AMBULANCE.

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head first. Then the ambulance went away at a gallop, the picture machine ceased its labors with a click, the crowd cheered and the best show of the meet was at an end.

A "star" is not necessarily a person who accomplishes some great feat—not at all. Notoriety and photographs make a "star." That is how Mrs. Joan Newton Cuneo, of Richmond Hill, Long Island, "heroine of the Glidden tour and the Atlantic City sandfest," comes to be included in the category. Mrs. Cuneo ought to be a happy woman, for was she not allowed to enter a handicap race



ONE OF THE STARTS.

(which, by the way, she did not finish because of the horrible dust) and drive a mile exhibition? But, to make her happiness more complete, she was photographed something less than one hundred times, in all conceivable poses. In one she held her pose long enough to be snapped in the act of drinking a bottle of—it was either sarsaparilla or ginger ale. While she imbibed one of her attendants held aloft two other bottles. Of course, she was heartily cheered. The public usually welcomes any radical departure from the conventional, and it certainly was an innovation to have a driver in skirts participate in automobile track races.

Apart from these features, nothing startling happened. The closest race was the five mile pursuit between Emanuel Cedrino, 24-horsepower Fiat, and Dan Wurgis, 32-horsepower Reo. Neither car had an advantage until the last lap, when the Italian forged slowly ahead and won by thirty yards. Time, 5:08 4-5. Later, Cedrino drove a mile exhibition in 1:00 2-5. The other events developed into the usual runabouts, except the one mile open for runabouts. This was won by Charles Fleming in an 8-horsepower Maxwell by about a length from R. E. Randolph, also in a Maxwell. Time, 1:52 2-5.

At the tape in the two mile invitation for Stoddard-Dayton cars, nearly half a mile of daylight separated the cars of James McIlvid and E. A. Shotwell, the former leading. H. E. Randolph won the three mile event for Maxwell touring cars, after a running fight with Charles Fleming. H. A. Grant trailed third. Mrs. Cuneo was entered in the five mile open handicap, but withdrew after the third mile. She drove a White steam car. Charles Fleming received a generous time allowance of 3 minutes, and led by seven-eighths of a mile at the finish. E. Cedrino, 24-horsepower Fiat, the lone scratch man, finished second. Summaries:

One mile open, for stock runabouts—Charles Fleming, 8-horsepower Maxwell, first; R. E. Randolph, 8-horsepower Maxwell, second. Times, 1:52, 1:52 2-5.

Two miles, for Stoddard-Dayton cars—James McIlvid, first; E. A. Shotwell, second. Time, 3:28.

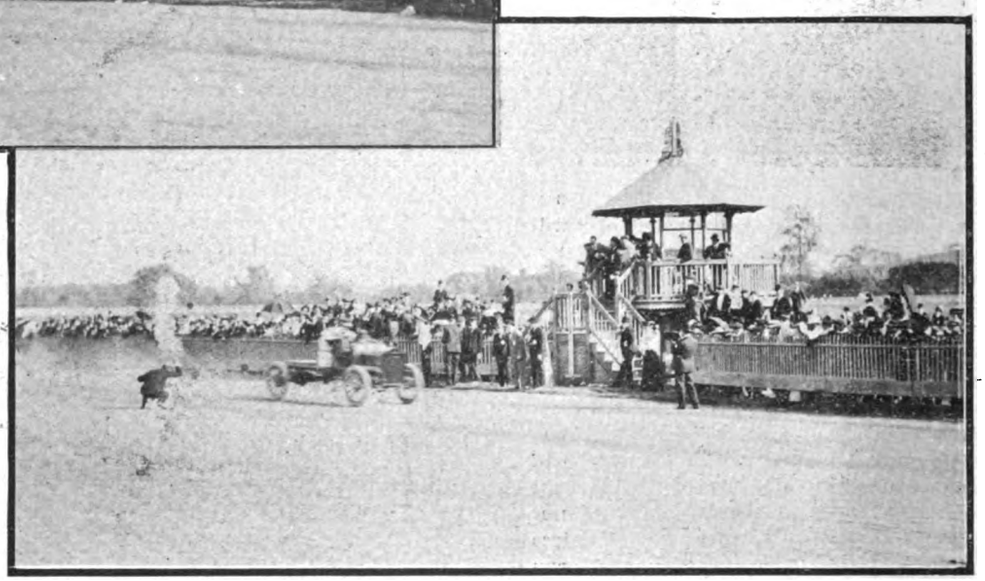
Five-mile pursuit between Emanuel Cedrino, 24-horsepower Fiat, and Dan Wurgis, 32-horsepower Reo—Won by Cedrino. Times, 5:08 4-5, 5:14.

Three miles, for Maxwell cars—H. E. Randolph, first; Charles Fleming, second; H. A. Grant, third. Time, 5:18 3-5.

Five miles, free-for-all, for points in national circuit championship—Barney Oldfield, 60-horsepower Peerless, first; Dan Wurgis, 32-horsepower Reo, second; C. G. Wridgway, third. Times, 5:50 3-5, 6:02 3-5, 6:15 3-5.

Five-mile handicap—Charles Fleming, 8-horsepower Maxwell (3:00), first; E. Cedrino, 24-horsepower Fiat (scratch), second; Dan Wurgis, 32-horsepower Reo (0:05), third; C. G. Wridgway, 35-horsepower Peerless (0:50), fourth. Time, 7:15 2-5.

Time trials—One mile: Barney Oldfield, 60-horsepower Peerless, 0:57; E. Cedrino, 24-horsepower Fiat, 1:00 2-5; three miles, Mrs. Joan N. Cuneo, 15-20-horsepower White, 4:37 1-5; five miles, Barney Oldfield, 60-horsepower Peerless, by miles, 0:57 2-5, 1:53 4-5, 2:51, 3:50, 4:47 3-5.



THE STARTER AND THE "HEROINE."

France's Substitute for Bennett Race.

Like a shift of the wind sentiment in France has veered from the racing game, and now blows with full force in favor of touring competitions. There is an annual fixture of this class in practically every country prominently identified with manufacturing, but France is loth to see her waning supremacy dwindle any more, so it is proposed that the French Automobile Club father the event of events in this category—le concours du concours, so to speak. The suggestion comes from the head of the De Dion house that a 3,000-mile contest be inaugurated through France, Italy, Austria, Germany, Holland and Belgium, with the start and finish in France.

It is said that the German club has signified its approval of the project, but has registered a protest regarding the distance, which is considered excessive. "But 5,000 kilometres is a small matter to the modern car, and in consequence a maximum must be fixed." This statement is attributed to the Marquis De Dion, who is also reported as saying that "the contest will not be a touring competition in the strict sense of the word, but an industrial struggle between makers of every country.

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COMING OF COLD WEATHER

Some of the Things it Should Suggest to Motorists—Precautions That Pay.

Although there is as yet little indication of the approach of the cold weather, either in the quality or temperature of the air, still the tourist and he who rides afield at the week end sees in the foliage the unmistakable hallmark of the fall, and now and then in the hollows receives a blast of chilling dampness which tells in unmistakable language what perhaps his instinct and the calendar have not—that the winter is but a few paces off, as it were, and that its forerunners, the frost and the cold rain, are to be expected within a very brief time. That being the case, it behooves the motorist to bethink himself of certain very essential provisions which are to be made before the advent of that unwelcome season.

The epoch has well passed when the car owner uses his machine up to the time when the temperature becomes inconveniently low, and then sets it aside to wait for the coming of the spring. Instead, with few and rare exceptions, he goes on driving throughout the year, only taking to the older and less approved modes of conveyance when the combined efficiency of the weather man and inefficiency of the highway repair man have made the ways he is used to travelling wellnigh impassable, or when the excessive cold overcomes his hardihood and drives him to cover.

Although the motor car has been evolved, or developed, or simply grown to a point where it is to be relied upon to go its pace under all circumstances except the very worst, and although it has proven itself to be a faithful servant to the needs of man, and more to be trusted under stress of adversity than its predecessor, the horse drawn vehicle, there are yet certain conditions which must of necessity be observed in order to get from it the full measure of its work. These conditions in which the running of a car in the winter differ from those which obtain at any other season relate chiefly to two matters—namely, to the effect of cold upon the lubricants and upon the cooling water.

As to the effect of cold upon the lubricants, it is evident that the lower the temperature the more viscose becomes the oil and grease which is applied to the bearings, and that on this account when a car has been allowed to stand for any length of time in a cool place all bearings will exhibit a greater amount of friction than is their wont, and will continue to do so until they have become heated or until they are supplied with a thinner oil. On this account it is quite essential to keep track of the oil which is supplied to the more delicate parts of the machine, changing it as occasion seems to demand, and making sure from time to time that all ducts and passages are perfectly free from deposits of any sort which might tend to hinder the flow of the feed.

It is as yet rather early to take up the matter of the prevention of freezing of the cooling water, but it is well to bear in mind that some provision will become a necessity before many weeks if the machine is to be left out of doors at night for any length of time, and that careful experiment both in the laboratory and on the road has shown that a mixture of alcohol and glycerine, with the water, in a proportion varying with the temperament of the car, is to be relied upon at all times, and that by altering its strength as the colder weather comes on it may be made to serve efficiently throughout the season, with absolutely no danger to the car either from freezing or from the after effects which render the use of some of the nostrums which are placed upon the market prohibitive to the man who has any amount of regard for the welfare of his machine.

What Happened to Rockefeller.

John D. Rockefeller, Jr., who is touring Europe in an automobile, was recently ordered to "get a horse," but found it necessary to get eight of them and to enlist the services of twelve men in addition to pull his car and party, consisting of his wife and two friends, the chauffeur and gendarme. The party left Chamounix for Martigny over the Tete Noir pass, not knowing that automobiles are not permitted in the pass. The arrest was made at the village of Chatelard, where the gendarme captured the party and refused to allow anybody to drive the car. John D., Jr., evidently did not care if he never got there, and permitted the all important French constable to have his own way, with the result that the strange procession already described finally arrived at Martigny, where the usual heavy fines were collected. Just to show there was no hard feeling Mr. Rockefeller treated the gendarme and the twelve two legged horses to a good dinner.

And Now a Speedometer Contest!

There have been contests for this, that and the other thing, but the list is apparently far from being exhausted, for all the accessories of the car have not been made the subject of a public contest as yet. The German Automobile Club will inaugurate this end of it by holding a speedometer contest next spring—not to see just how much these instruments will stand without putting up a protest, but to arrive at the most reliable and convenient form, which, having established its supremacy under an elaborate set of rules and regulations, will doubtless receive official sanction thereafter.

This Club Gives Cash for Good Roads

The Portland (Ore.) Automobile Club has come out strong for good roads. At the last meeting of the club it was voted to expend $5,000 to improve the highways in the vicinity of Portland; $2,400 was raised before the meeting adjourned for the oiling of the roads.

BAY STATE "SYSTEM" FAILS

Elaborate Police Trap When Tried in New York Catches No Victims and is Rejected.

New York's Police Commissioner decided that things were propitious to give his imported-from-Massachusetts system of apprehending scorchers a trial last week, and a gathering of the department's stop watch experts was stationed at Dyckman street and Broadway, near the entrance to the Boulevard Lafayette. Three telephone signal booths were established, each a quarter mile from the next, and extra sleuths with motor bicycles were on reserve duty at these points.

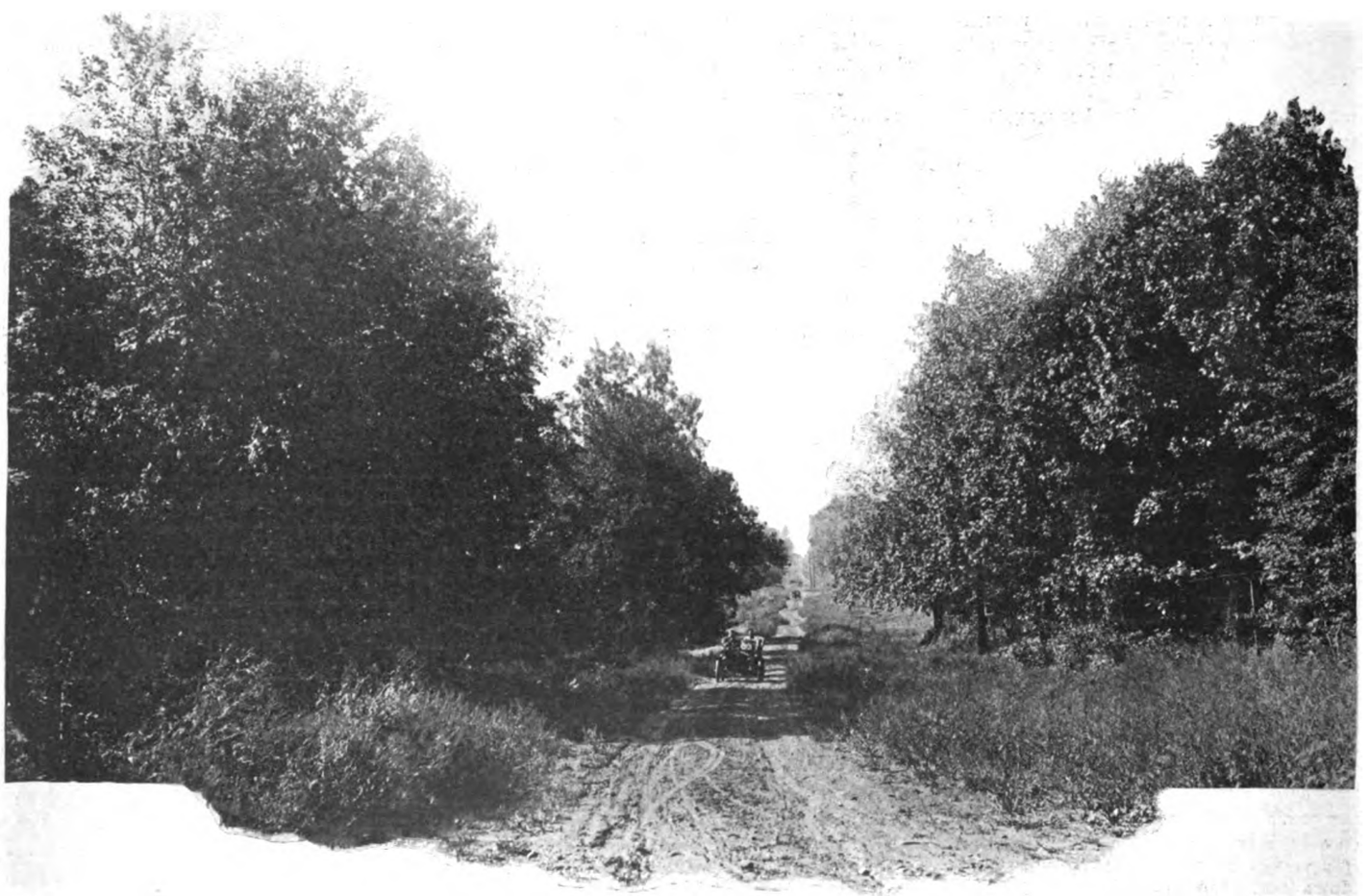
The system, according to the imported "expert," is as follows: Immediately an over speeding car passed station No. 1 a telephone message would be sent to No. 2. If the car had not already reached or passed that station, the expert on duty there would start and stop his watch before it did so—if he could. Having taken the time observation and reduced it to a miles per hour basis by mathematical calculation, and likewise having determined that the legal limit had been exceeded, he would then proceed to signal the third station, and an arrest would follow.

But more than one thing interfered with the smooth playing of the game. First and foremost, the stop watch experts proved bunglers with the 'phones and experienced considerable difficulty in managing them as per schedule. Then, again, the victims would not oblige, either by running over the marked course, or by exceeding the limit when they did so. Public knowledge of the establishment of the stations caused drivers to avoid the course, while those who did not "spotted" the booths by their signs and gave the experts plenty of opportunity to calculate their exact rate of travel by slowing down to a point that made figuring it out an easy matter.

Even where an arrest is made, there are some large holes in the system through which the victim may escape. In the first place, an arrest suspends operations until the three experts necessary to make a complaint can return and get busy again. Because of the lapse of time in making telephone connections between stations, stop watch records cannot be accurate, and in the interim the driver may change places with a passenger, thus making specific arrests impossible. Bicycle Policeman Casey and his confreres were unanimously agreed that the former method of catching the offender by chasing him on a motor bicycle had the new system "faded," while the cost of maintaining the "system" removed any lingering doubts the Commissioner himself may have had. What the young man who devised the system and was brought from Massachusetts to operate it thinks is not a matter of record or of great concern.

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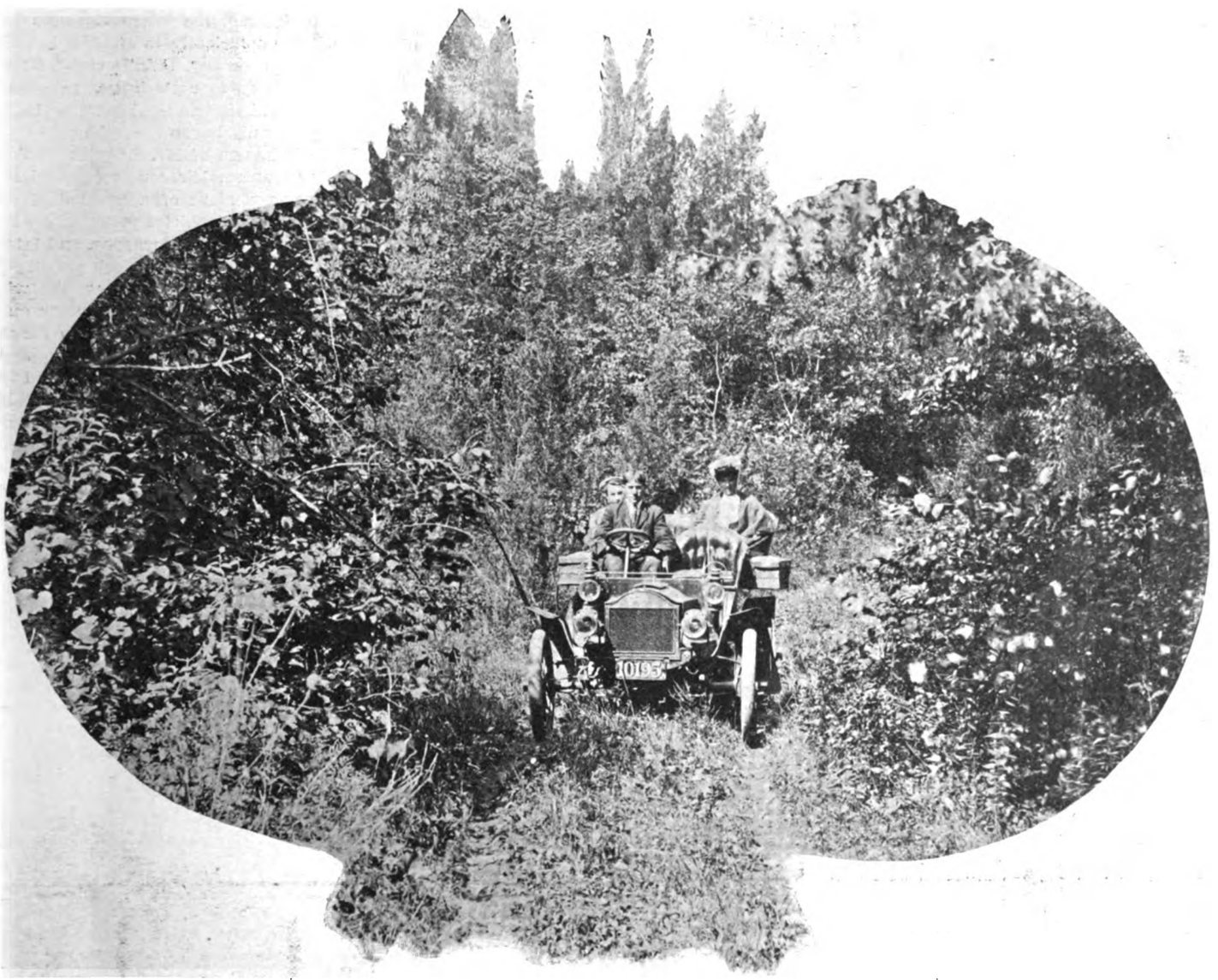




PICTURESQUE SPOTS IN THE ORANGE MOUNTAINS.

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Beauty Spots Almost in Sight of New York.



ONE OF THE WOODLAND BYWAYS IN THE ORANGE MOUNTAINS.

Within fifteen miles of New York, perhaps it is twenty miles by way of Newark, may be found touring as delightful as may be found in the Mt. Washington district, roads as fair as any in Europe, hills, valleys and wild wood scenery in plenty.

The New York automobilist who wends his way to Newark via the Plank Road, which is horrible, or via the Turnpike from Jersey City, a road now rapidly being made a boulevard through improvements, will be wise to go out Springfield avenue straight to Maplewood, to Chatham and Morristown. Just before reaching the heart of Morristown a turn will be encountered, rounding which a beautiful road will be found leading in a winding way into the Orange Mountains. One mile from the turn there will be unfolded a view as grand as any to be found in Europe, a road which goes gradually down and down and then up and up, and which may be seen for miles. Along this road will be encountered countless cross roads, any of which may be followed, and all of which will yield beautiful scenery.

But one there is which is hidden in a way by weeds, and a turn to the right into this will lead into what is known as the Essex County Park Reservation, but the term park is a misfit, as the country is wild and interesting, while the roads are of the country variety, but grand in the extreme. A straight stretch is followed by a long letter "S" curve, and then comes a glimpse of a brook, and the road follows along this brook for miles, as pretty driving as any one could wish. The outlet is at Millburn, but the driver should retrace the route to South Orange avenue and go up the steep grade which he left. This road will wind up and up to the top of the mountain, and from the summit will be gained a grand view of South Orange and other of the Oranges.

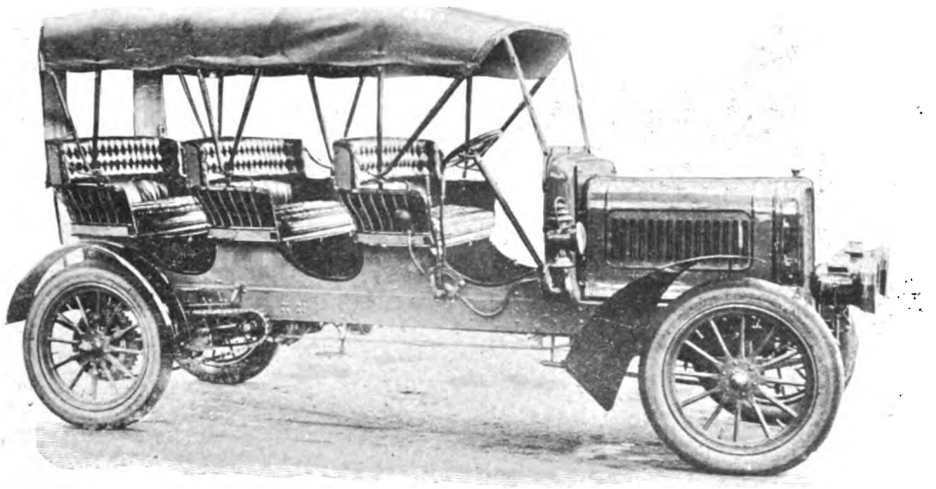
Once down the steep hill to South Orange the trip may be extended, following the car tracks where the curve to the right to Maplewood and thence to Short Hills and down the beautiful hills which give the territory the name. This will again lead the tourist into South Orange avenue after many miles of beautiful road, and then the trip may be taken again through the district in almost any direction and out from South Orange toward Llewellyn Park and thence up St. Cloud hill to the top of the mountains, along which a road winds which ultimately carries the tourist down the famous Eagle Rock Hill, the scene of so many great hill climbs. The views from the heights are glorious.

In general, the tourist should merely decide to tour through the Orange Mountains and then follow any old road, for all lead to somewhere, and all hold delightful views and beautiful roads such as may be found nowhere else so near to New York.

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Pope Turns to Wagonettes.

For use in Nevada to convey prospectors back and forth from the mines, the Pope Motor Car Co. has turned out an entirely new type of vehicle, with a high powered engine, and will make them on orders in future.



POPE'S NEW WAGONETTE.

This new Pope-Toledo is known as a three-seated wagonette; the first one, made for Charles Christmas, is shown by the accompanying illustration. It has a four cylinder engine, supplying 45 horsepower. The cylinders are 5x5¾ inches. It has jump spark ignition, the usual Pope carburetter, a rotary and gear driven water pump and an external cone clutch of new design. The new system of cooling known as the Pope-Toledo planetic, an entirely new principle, is incorporated in this wagonette.

The frame is of wood, re-enforced with steel plates. It has a gasolene capacity of thirty gallons, sufficient for 450 miles. The wheel base is 114½ inches, and three persons can be seated comfortably on each seat.

Logan's Latest Truck.

One of the marks of the rapidly increasing importance of the commercial motor car is the fact that the crop of 1906 models is being placed on the market much earlier than has ever been done with touring cars, and that many of the makers of other types of car, as well as the commercial vehicle, are striving to get out their truck models in advance of the others. Of these, the Logan Construction Co., of Chillicothe, Ohio, is just announcing a new 30 horsepower one and one-half ton truck, which it is building for the forthcoming season.

In so far as the general layout of the machine is concerned, this model is not unlike the former commercial vehicle put out during the present year, and as to chassis and power plant it also resembles the Logan touring car. That is to say, it is equipped with a double opposed motor set longitudinally under the body, with automatic inlet valves of liberal size, and designed for a speed variation of 150 to 1,400 r. p. m., has a two-speed sliding gear transmission and contracting band clutch.

The chief points of difference between this and the older models lie, first of all, in the cylinder dimensions, which are 5½x6 inches; then the transmission is fitted with an additional brake, and the carrying space is much greater than that in the lighter powered wagon, there being eight feet in the clear behind the driver's seat. In the later cars the body equipment will, of course, be at the option of the purchaser.



LOGAN TRUCK DOING HEAVY DUTY.

The illustration shows the first machine of its class, which has been constructed for the Depot Carriage & Baggage Co., of Kansas City, Mo.

On October 15, the new Absecon, Port Republic and Tuckerton automobile stage line, in New Jersey, will begin operations. Two cars, making two round trips daily, will be used. The round trip fare will be one dollar.

Ruggles Tries His Wagon on Ware.

F. A. Ruggles, the Ware (Mass.) man who, some time ago, "received valuable patents on automobile construction," is now endeavoring to interest the Ware Business Men's Association sufficiently to aid him in launching a stock company. While waiting for his stock company to materialize, Ruggles has leased the old electric light building in Ware and has already begun operations.

Little is known of Mr. Ruggles' "valuable patents on automobile construction," but the Ware correspondent of a Springfield paper states that "The vehicles manufactured will be laundry and grocery wagons, and later on heavy trucks. Mr. Ruggles' patent does away with chains and gearing, the wheels working by friction. A small engine on one of the Ruggles automobiles will do the work of an engine of several more horsepower on the old style automobile. A 1700-pound truck wagon was on exhibition to-day, Mr. Ruggles taking it about town and showing the workings to the merchants and business men. The truck was run by an engine of small horsepower, but bowled along Main street as easily as though run by an engine of 40 horsepower. There is considerable enthusiasm over the prospect of the several new industries in Ware."

May Establish Parcel Express.

As a result of the refusal of the city of Holyoke, Mass., to grant the petition of a railway company for a parcel express privilege, there is every probability that an automobile parcel express will be established within a short time. Alderman George Bennet is quoted as having said at a recent meeting of the aldermanic body that a group of capitalists stood ready to back such an enterprise, and there is every reason to suppose that there is something of the sort in the wind.

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GLIDDEN GOING AGAIN

Will Begin in India Another Installment of His Globe Girdling Tour.

Charles J. Glidden will leave Boston on the 24th inst., to undertake another chapter of his around the world in instalments tour, which many erroneously thought he had concluded upon his return to this country last spring.

"When I first contemplated touring the globe in a car a journey but once around appeared necessary to enable me to make drives in all desirable countries," said Mr. Glidden. "Climatic conditions are such, however, that to insure health and comfort another circling of the globe is advisable, as many of the countries on the itinerary are within the tropical regions and should be visited only in our winter months."

It will be recalled that Mr. Glidden has been engaged in globe girdling ever since 1901. In that year and the three following he devoted himself to visiting the Northern European countries, and in the latter part of 1904 crossed America and, after having driven through such far southern countries as Tasmania, Fiji, Neaw Zealand, Australia and Java, presumably concluded his tour by returning to Boston in June of the present year. This gave him a record of 25,100 miles in twenty-four countries, which he expects to make 30,000 miles in thirty-one countries before returning to Boston in June, 1907.

The route of the present trip will be by steamer to Bombay, India, via Plymouth, England, and Marseilles. December and January will be devoted to India, February for Burmah and Ceylon, March for Siam and China, April for the Philippines and May for Japan, returning via the Pacific. Most complete preparations have been made in advance. Agents in all the principal cities have been informed as to the probable time of arrival, and will be given exact dates as the tourists approach them. Interpreters and servants have been engaged where necessary; gasolene and lubricating oil provided for at necessary points; hotel accommodations have been secured and military protection arranged for where thought advisable by the authorities. Steamship sailings and accommodations for the car have all been prepared in advance, as well as facilities for passing through the customs at the various ports. In addition to the complete equipment carried, extra parts and tires will be forwarded to Calcutta, Colombo, Singapore and Yokohama. The specially constructed wheels used in running on the tracks of the Canadian Pacific Railroad last year will also be sent ahead to countries where there are no available roads.

Not content with this achievement, Mr. Glidden figures that Algeria, Tunis, Sicily, Tripoli, Turkey, Egypt, Spain, Portugal, Russia and the South American republics are countries that will still remain to be visited, extending the drives into 1911, or ten years from the beginning of the undertaking. This would increase the mileage to approximately 50,000 and the number of countries visited fifty.

"Big Liz" Absent from Baltimore.

At Electric Park, Baltimore, Md., last Thursday night, 28th ult., an electric light automobile race meet furnished entertainment for more than 2,000 spectators. One of the notable absentees was Howard Gill and "Big Liz," his specially built steam car. This was somewhat disappointing as "Big Liz" was entered in the five-mile open for the "Championship of Maryland." As every meet held in Baltimore this season has contained a "State Championship" event, Mr. Gill may yet have a chance to win the honor, if such it be.

In the five-mile event Edward Buchanon, in a stripped 30-horsepower Pope-Toledo, won the first heat from Clyde Lozier, who drove a 20-horsepower car. The second heat was taken by Albert Wagner. The final between Buchanon and Wagner was the most exciting event of the evening. Wagner jumped into the lead at the start and succeeded in stalling off Buchanon's most persistent efforts to go past until the last lap. Then Buchanon, in the Pope-Toledo, went ahead and won out in a driving finish. Time, 8:39.

In the mile judgment race, the driver covering the distance nearest to two minutes to be adjudged the winner, Thomas Goodwin was awarded the prize, his time being 1:56. Edward Buchanon was second, in 1:46, and Clyde Lozier third, in 1:45.

Raymond Thomas, on a one and three-quarter-horsepower Indian started from the scratch in the five-mile motorcycle handicap and at the tape was nearly half a mile ahead of L. J. Hayden, one and three-quarter Rambler, with one-quarter of a mile handicap. Time, 8:29. Summaries:

One-mile judgment, one driving nearest to two minutes—Thomas Goodwin, 35 h. p. Columbia, first. Time, 1:56.

Five-mile handicap, motorcycle—Raymond Thomas (scratch), 1¾ h. p. Indian, first; L. J. Hayden (one-fourth mile), 1¾ h. p. Rambler, second; Herbert Webber (one-eighth mile), 1¾ h. p. Indian, third. Time, 8:29.

Two-mile handicap—Albert Wagner (100 yards), first; Clyde Lozier (scratch), second; Thomas Goodwin, 35 h. p. Columbia (200 yards), third. Time, 3:05.

Five-mile free-for-all—First heat—Edward Buchanon, 30 h. p. Pope Toledo, first; Clyde Lozier, second. Time, 8:46. Second heat—Albert Wagner, by default. Final heat—Edward Buchanon, first; Albert Wagner, second. Time, 8:39.

Following the route taken by his brother, J. W., Elwood Haynes yesterday left the Haynes Automobile Company's factory in Kokomo, Ind., for a tour of the East, stopping to do business at all of the larger cities en route. He is using the other four-cylinder car that is included in the Haynes 1906 line.

WORM BEGINS TO TURN

Long Suffering Massachusetts Animal Fights Back—Plans to Fool the Grafters.

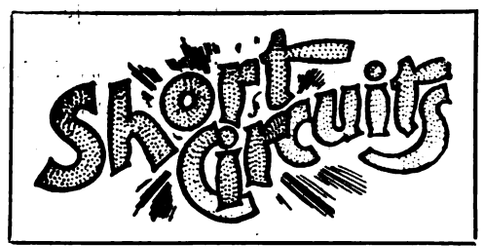
Conditions in the Bay State have reached a stage where automobilists generally are of the opinion that it is high time for persecution at the hands of rural constables to be ended. The Massachusetts Automobile Association, comprising seven clubs located in various parts of the State, has accordingly issued a circular letter requesting financial assistance and co-operation in a campaign to prevent the passage of adverse legislation and to further that of any favorable laws that may be proposed.

The recent arrest of E. A. Gilmore, manager of the Rambler branch in Boston, proved the last straw. Accompanied by a friend and a representative of one of the tire companies, he left Boston on Saturday morning for a trip to Providence in order to attend the races there. A start was made in ample time, and the fifteen-mile an hour limit was being carefully observed and checked by the speedometer in order to be immune from the attentions of the overzealous constable. But the party was held up near the Rhode Island line, nevertheless, and accused of speeding, to their great surprise. Asked what he made it, the all important official announced with a cocksureness that took away the breath of his hearers that the car had been running at 16.67 miles an hour exactly. The testimony of an accurate speedometer supplemented by the two witnesses was not sufficient to counteract that of the "corn-stubble's" stop chronometer, and a fine of $10 was imposed. An appeal was taken, and the case will be carried through to the highest court, if necessary.

The Worcester Automobile Club has also undertaken a campaign of its own with the same object in view. It has circulated a letter strongly advising all members that, instead of meekly giving up when fined by some roadside justice of the peace on the unsupported testimony of a constable, to appeal the case in every instance and without fail. It is said to be a matter of common knowledge that the great majority of arrests in that State, which total hundreds monthly, are made solely for the graft accruing to the local hamlet and the constable. Accordingly in appealing every unwarranted arrest two things are accomplished. In the first place, it will cost the county far more than the amount of the fine, and if in the end the fine be imposed it will revert to the county instead of the town.

An automobile passenger and freight line from Stroudsburg, Pa., to the Forest Park, a resort sixteen miles out, is being planned by Arthur Lederer, the proprietor. This line will be in diect opposition to the Delaware Valley Railway, and will probably embarrass it not a little. This corporation came into prominence some little time ago by its close escape from going to the wall as a result of a scrub woman's appeal for a debt of $1.

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The New Jersey Automobile and Motor Club is already planning for the Eagle Rock hill climbing contest. As usual, it will be held on Thanksgiving Day.

Elkhart, Ind., now has an automobile club, taking the name of the town. Organizatiou was perfected last week, when these officers were chosen: President, C. G. Conn; vice-president, G. A. Briggs; secretary, R. C. Barney; treasurer, J. A. Cook.

A Kansas rural editor, commenting on the rumored $400 automobile, has this to say of a brother quill driver: "This announcement causes us to remark that when they cut off two ciphers more from the cost that we know where one more machine can be sold."

Buffalo is said to be suffering from a famine. There are not enough men to drive all the cars that are owned in the Lake City. The combined output of the Pierce and Thomas factories and the Y. M. C. A. training school is reported to have fallen far short of meeting the demand.

It is not a new twist to the venerable mother-in-law joke, but a fact, sans veneer, that a wealthy Jerseyman traded in his touring car and bought a runabout, giving as the reason that his mother-in-law always thought there was room enough for her so long as he had the touring car.

A bi-daily automobile touring car service between Philadelphia, Pa., and Atlantic City, N. J., has been inaugurated. Regular trips will be made on Tuesdays, Thursdays and Saturdays, starting from the Bellevue-Stratford Hotel, in Philadelphia, at 2 p. m., and from the Chalfonte, Atlantic City, at that hour on Mondays, Wednesdays and Fridays.

Automobile owners in Centre County, Pennsylvania, have organized the Automobile Association of Centre County, with headquarters at Bellefonte. These officers were elected: President, George C. Watson; vice-president, A. C. Mingle; secretary-treasurer, Robert F. Hunter; directors, George C. Watson, C. D. Fehr, John Porter and R. F. Hunter.

Not to be outshone by the greater Eastern cities whose capacity for orphans was so much in excess of their own that they outdid them in point of parade front on "Orphans' Day," the members of the Minneapolis Automobile Club went a step and a half further the other day and gave an outing to the nurses and nuns who care for the poor little orphans.

"Gasolene lid" is the most recent addition to the vernacular. Like the majority of terse and expressive bits that go to make up American slang, its meaning has but more or less remote connection with its apparent import, for it is merely the official slang appellation for automobile cap, and has no connection whatever with any part of the machinery or the car.

The Automobile Club of Washington (D. C.) completed its organization by the election of the following officers on Friday last: President, W. S. Duvall; vice-president, C. S. Wood; secretary LeRoy Mark; treasurer, H. B. Wilson; captain, R. B. Caverly; lieutenant, Frank H. Edmonds; board of governors, Burr N. Edmunds, F. B. Pyle, Fulton R. Gordon and Frank H. Edmonds.

Virtually excluded from the streetcar lines of the City of Nashville, Tenn., by a recent municipal enactment, the negroes of that burg have organized for themselves and on their own responsibility a Jim Crow motor car line. Whether or not it will be a success, of course, remains to be seen, but the action of the city has caused a loss of something like $700 a week to the railroad company at all events.

According to the latest statistics issued by the Contributions Directes department, the number of automobiles in France registered for taxation purposes is 17,107. Of these, 12,713 can seat more than two persons. Paris is represented by 3,146 automobiles, 2,613 of which have more than two seats. The number of horse carriages in France is 1,637,562, and that of cycles 1,150,098, including 16,118 with motors.

The Windy City's latest claim to fame, the reputation of her holding the "only national show" being ignored for the present, is that she holds the record for the youngest "choffer," this being one of the many Chicagoese variations of the word. He is Harold Gourdain, twelve years of age, and is reputed to have mastered a 40-horsepower Thomas car to a degree that puts the average hired man in the leather suit to the blush.

Wth the aid of an automobile General A. R. Chaffee, commander in chief of the United States Army, is said to have recently fought the battle of Waterloo out for the satisfaction of himself and a party of American Congressmen by running over that historic field in a car. Beginning just as Napoleon and Wellington did, the car coursed back and forth, as did the opposing armies almost a century ago, and, needless to add, showed how Napoleon could have won it.

The automobile is now proving itself a factor in the settlement of the labor problem, at least as a means of enticing strike breakers to printing shops where labor troubles are in progress. Three autobuses provided the means of recruiting, and after hours the non-union force was treated to a three hour "seeing Chicago" ride, which an officer of the Chicago Typothetæ is of the opinion is the best means ever discovered of preventing desertions.

An occasional vein of humor is apt to crop out even in that most serious of affairs, a prosecution for exceeding the legal limit. It is a matter of record that the prosecuting attorney in a recent case so shuffled the papers of the numerous petty cases summoned for trial that day that the over-the-legal-limit offender was seriously accused of selling adulterated milk. But the fates were kind, for the error brought forth so much merriment that the motorist subsequently got off scot free.

A car for the "advance man" is heralded as the latest development in the use of the automobile for business purposes. The first one to take the road left New York on Sunday afternoon last bound for Pittsburg, with Maynard Waite, who is the advance representative of Robert Edeson's company, at the wheel. From Pittsburg the route will be through Cleveland, Detroit, Chicago, Minneapolis, St. Paul, Milwaukee, St. Louis and Kansas City, proceeding as far West as Denver.

"Any American who motors on the other side cannot help looking forward eagerly to the time when his own country will afford such splendid sport," said one of the many returning tourists who have spent the summer speeding over the endless smooth stretches afforded by the Continent. "That is why it is a good thing that thousands of devotees of the car go abroad each season. They come back each one determined to further the campaign for better built highways at home."

There is one man in the employ of the New York City Street Railway Co. whose duties might seem a round of pleasure to some automobile enthusiasts.

It is his business, whenever word is received of a collision of one of the company's cars with an automobile, to jump into the machine provided for him, hasten to the scene of the accident and inform himself as to the extent of the damages suffered by the injured automobile, so as to be able to testify in the company's behalf if suit is brought by the owner. Motormen must have the automobile habit, for he is kept pretty busy, though he exercises other and subsidiary functions in the company's service.


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100 MILES PER HOUR

Almost, but Not Quite Attained, and Why—Big Road Races Practically Abandoned.

Paris, Sept. 19.—The events of the past season have given astonishing proof of the progress that continues to be made in the construction of motor cars. The long distance races over the Ardennes and the Brescia Circuit have shown higher speeds than have ever been attained over courses of this description, and yet it is admitted that the cars did not travel so fast as they ought to have done, in view of the fact that the engine powers and gears have in many cases been calculated for speeds of 100 miles an hour. This limit is, of course, a purely arbitrary one, for the makers obviously cannot take into account the varying resistances of road surface, which differ considerably on every course, and is always a fluctuating factor; but nevertheless it is fairly certain that many of the big cars competing this year would have very nearly reached the 100-mile limit had the drivers deemed it prudent to let the vehicles run all out.

As a matter of fact, there are several things that are constantly fighting against these exceptionally high speeds. The course is never straight, and as the cars have to be repeatedly slowed down to a safe speed when taking bends the average falls considerably in a long distance race, while the professional driver has had so much experience of the limitations of the pneumatic tire that he finds it better for his chances to keep down the speed so as not to heat his tires unduly, rather than to wear out several sets of tires and lose a quarter of an hour each time in replacing them. Thery attributes his success largely to the fact that he never allows himself to be hurried by competitors who are going faster on the first round or so. He knows the speed at which he can drive with a minimum risk of tire troubles, and if he takes five minutes more than another car on a round, and this car loses a quarter of an hour with the tires, he still has ten minutes to the good. This is the principle that guides most successful racing men, and explains why the times are not usually so good as might be supposed from the good character of the course.

That the 100-mile average is not a myth is shown by the recent performance of the new Mors car at the Provence meeting, where the vehicles competed over a straight stretch of five kilometers for the Rothschild cup. The car has a 120-horsepower engine and was piloted by a professional who has not yet made any name for himself in speed contests. He covered the five kilometers in 2:00 1-5, which is equal to an average of 90.3 miles an hour. This performance seems to suggest that there are other cars capable of doing the even 100 miles. The Mors beat the Mercedes, driven by Stead, by 6 2-5 seconds.

The progress of car construction is, however, particularly remarked in the hill climbing trials, where the engines have to work to their fullest capacity, and the cars are subjected to the severest possible test. As the engine is constantly running under full load, it will very soon reveal any defect in the cooling arrangements or lubrication, and an increase of speed depends largely upon the economy of transmission, while every part of the vehicle is submitted to the maximum strains. It is, therefore, a real test of efficiency, and the times made every year are very valuable as a means of showing the improvements carried out in motor cars. No gradient offers a more searching test than the thirteen mile road up the Mont Ventour, where the incline increases from 6 per cent at the start to 13 per cent at the top. The rise is maintained steadily the whole way without the slightest drop, and the load, therefore, increases just at the moment when a badly designed motor is the least able to support it. To add to the difficulties, the road is constantly winding, and needs very skilful driving to get to the top at high speeds without accident.

Among the touring cars very few big firms were represented, but it is interesting to see the success of those makers who have always made a special feature of the hill climbing capabilities of their cars, the Chantiers de la Buire winning in both categories in which they took part. The Chantiers de la Buire are a big engineering concern in the Loire, who make a side line of motor cars, and the feat of one of these vehicles in climbing the Mont Ventoux in full touring trim in 24:19 is a very meritorious one. In both cases the Buire cars beat the Berliets, which have also a high reputation as hill climbers. It was, however, among the racing cars that the records went by the board, and the Fiat again covered itself with honor, Cagno driving up his vehicle in 19:30, beating last year's record by nearly two minutes. Rougier, on his De Dietrich, was only 15 seconds behind, and a Rochet-Schneider and the Mors of Collomb, which a few days before won the Rothschild cup, were beaten by three and four minutes, respectively. The Darracq voiturette got to the top in 25:39 4-5, thus beating the previous record by 4:19. Such figures are eloquent of the higher efficiency of this year's cars, and show that they have undergone an all-round improvement.

It is perhaps a little too early to say that racing has seen its day, and that the present year, which the Auvergne, Ardennes and Florio cup races, marks the end of long distance speed contests, but for the moment everything points to the fact that the organization of races in Europe will henceforth be entirely abandoned. Nothing more is said about the Grand Prix which France was to inaugurate next year to take the place of the Bennett contest, and there is no doubt that the idea has been definitely abandoned in favor of the great trial of touring vehicles which is to take place around Europe. In Germany there was some talk of promoting a race between Berlin and Vienna, but although there may be one or two isolated events of this kind, it may be said, in a general way, that motor car racing is dead, and will be replaced by big touring tests, in which an effort will be made to work up a universal interest in motoring.

The only country in which there seemed a possibility of racing being carried on was in Italy, but even here it seems as if the present racing enthusiasm is merely a flash in the pan, for the president of the A. C. of Milan, which is the most powerful and influential body in Italy, has announced that the club will no longer patronize racing in any shape or form. The president states that the tendency at the moment is in favor of touring trials, and this is the direction in which the movement is to be carried on in Italy.

The A. C. of Milan intends next year to promote a big touring trial, and for this purpose the president has interviewed James Gordon Bennett with the idea of inducing him to hand over his cup for that event. Mr. Bennett has agreed to this proposal, subject to an understanding being come to with the A. C. of France.

A meeting of representatives of the French and Italian clubs is to be held shortly to discuss the expediency of handing over the cup to the A. C. of Milan for its touring car trial, for which money prizes to the value of $30,000 have already been offered. Thus there is every prospect of the Bennett cup becoming a prize for touring cars, a fate that cannot but be regretted by all automobilists who think that, having done so much for the international industry, the glorious trophy should be allowed to remain, with the laurels it has gathered, in the motoring archives. There is nothing to prevent Mr. Bennett from presenting another cup for a touring competition.

Drawing the Law Fine.

Those English bobbies have a most exasperating way of seeking to enforce their laws clear down to the very last letter, and frequently in their effort they go a bit further and include the punctuation as well. For instance, not long ago, a man was summoned for driving a car to which "a second was attached by a rope," as the complaint quaintly worded it, the second being an unfinished chassis. The dealer's identification mark was attached to each of the cars, but some watchful minion of the law deemed this to be in some way irregular, and accordingly haled the driver into court. There it was shown that while the second machine was undergoing a species of testing process, the first was neither "on trial after completion nor on trial by an intending purchaser." Undoubtedly the driver would have been fined for a violation of the law had it not been for the fact that the indictment failed to show which of the two machines was complained of, and on that ground the case was dismissed.

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Biggest of Ball-Bearing Plants.

The Standard Roller Bearing Company, Philadelphia, has during the last year purchased a large amount of machinery especially designed for producing annular ball bearings, and now claims the largest capacity for making such bearings of any concern in either Europe or America. A special building, 70 feet by 125 feet, devoted exclusively to a department for hardening and tempering ball and roller bearings, has been completed, enabling deliveries to be made with dispatch. The furnaces are equipped with a special apparatus which tells the exact degree of heat in each furnace, so that the foreman at all times can tell the heat of the steel that is being treated, so that accurate results are always secured, which is not possible when the eye alone is trusted for determining the temperature.

The recent purchase by the Standard Roller Bearing Company of the Federal Manufacturing Company's ball business resulted in giving a capacity of two million completely finished balls daily. In order to take care of this branch of the business, a new 500-horsepower Brown engine and 300 K. W. Crocker Wheeler generator have just been installed.

The plant, which is claimed to be the largest in the world devoted exclusively to the manufacture of anti-friction bearings, steel balls, ball and roller bearings, is of colossal proportions. The main factory is nearly 600 feet long, and the ball plant 300 feet long, three stories in height, the total giving 145,000 square feet, in addition to which there is a large power plant, with about 1,000 horsepower in engines; also brass and iron foundries, tempering rooms, etc. The Standard people have a standing invitation to any one interested to inspect the entire place.

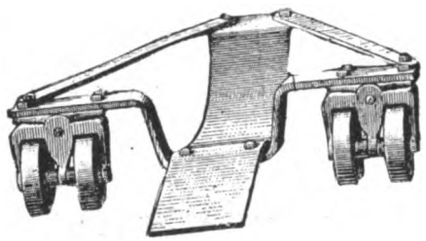
Departure in Insulated Wire.

A Berlin firm is making an insulated wire which is claimed to be far superior to any hitherto put on the market. For a long time past silk and cotton have been almost exclusively employed for insulating wires in electric machines and apparatus, but the fibrous nature of these materials renders them liable to absorb moisture, and thus necessitates the use of a varnish-like insulator as well to impart to them their requisite hydroscopic character. As it is impossible to reduce thread beyond a certain thickness, the varnish causes the insulating material to swell more than is desirable in cases where the winding space is so limited. The double-silk wire is only one millimetre thick. In the main it consists of cellulose-tetra acetate. A special machine puts the insulator on the copper wire in layers. The acetate is insusceptible to temperatures up to 150 degrees centigrade, and capable—at the above-mentioned thickness—of resisting high potentials.

A municipal watering cart which has recently been put into service in the city of Turin, Italy, is equipped with a 16 horsepower motor, and has the distributing nozzles located in front, where they are fed by a couple of pumps, which supply the water at a pressure of 30 pounds per square inch.

Making the Motor Car Movable.

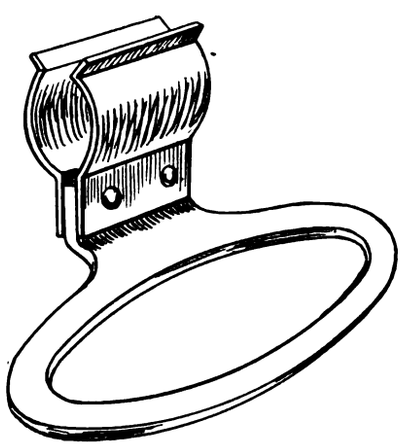
A convenient little accessory for the private garage, and one which the motorist can have made by the local blacksmith in case he is not able to secure the somewhat similar patented article from a dealer, is the portable truck for handling the car while it is being shifted about on the floor. Such an one is made up of four sets of castor trucks, one of which is placed under each of the wheels of the car, raising it slightly from the floor and permitting it to be turned in any direction at the will of the operator.



As shown in the cut, the device is constructed entirely of strap and sheet iron, roughly shaped up and bolted together, the castors being the only part which cannot readily be made in the shop. A set of trucks made in this way will be found to be a great saving, particularly in a garage where space is at a premium, serving at once the purpose of a turntable and a transfer truck, while when not in use the four little carriers may be stored under the bench or in any convenient place, where they will take but little room and will be ready for instant use when needed.

For Testing the Spark Plug.

Some time since much was said of a certain invention which was to lessen the cares of the motor car driver many fold, by providing him with a method of holding a spark



plug which was to be tested and insuring its good contact with the ground. The invention consisted of a casting which was threaded to fit the hole in the cylinder into which the plug was screwed in its normal capacity, and which had at its upper extremity a hole also threaded and adapted to receive the plug. In use the device was to be screwed into the cylinder in place of the plug, and the latter inserted in it, where it would be firmly held while under test and inspection.

The great disadvantages of this and all of the similar devices which might be contrived is that in order to use them it is necessary first to screw the arrangement into the cylinder and then to screw the plug into the device. A far simpler scheme and one which involves little or no expense is to permanently affix to the motor a little clip made of sheet metal, into which the plug may be set when it is desired to test it, and which does not interfere in any way with any of the mechanism of the machine.

In case the plug is set in a collar which is screwed into the head a strip of thin metal may be cut in the form of a gasket, a tag being left at one side which is bent upward, and to which a couple of thin strips of metal, bent to form a suitable clip, are afterward riveted in the manner shown in the sketch. When the collar is screwed in place it holds the clip firmly in place and is sufficiently rigid for all practical purposes.

In case the plug is screwed into the head in the more ordinary manner it is possible to fix the clip under one of the studs which hold the couplings of the water connections or to some other part in the manner indicated.

One Cause of Clutch Slipping.

In the common type of leather faced cone clutch, it is not at all uncommon when the facing has become well worn for a ridge to be formed in the leather at the back end. This is caused by the action of engagement, which tends to force the upper surface of the leather backward, thus creating a little bead at the face of the flywheel. In the course of time this becomes so great that it prevents the clutch from being fully seated, and is responsible for a great deal of slipping. To obviate the difficulty it is only necessary to cut off the ridge, either by paring it away with a sharp knife or by filing it down with a rasp. Care should be exercised in doing this, to see that the surface is left parallel with the outer face of the flywheel, and not simply in line with the surface of the cone, as in this way all future trouble from the same source is done away with.

Mexico as a Market.

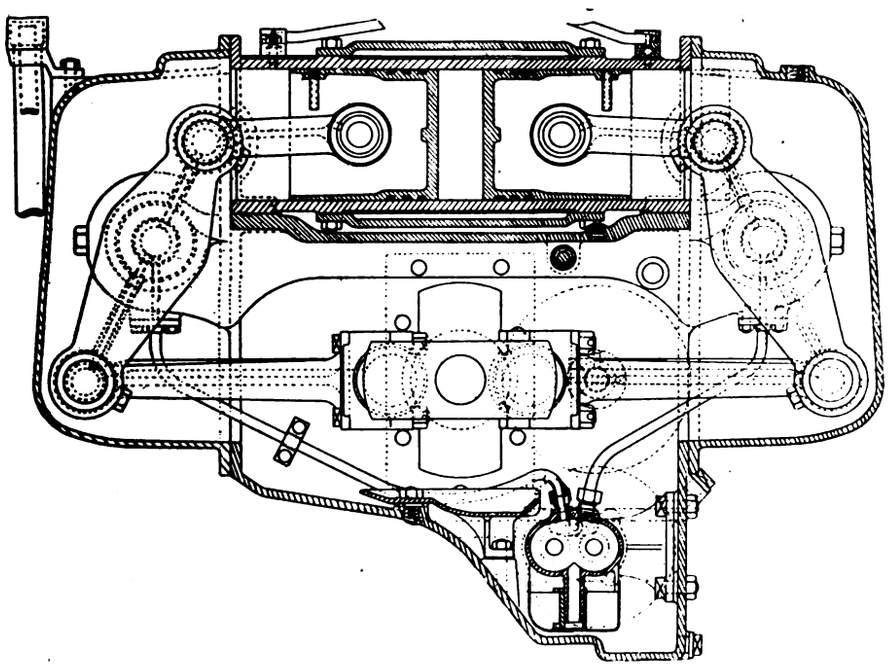
According to a recent consular report, Mexico presents an unusually good field for the sale of automobiles of moderate price. It is conservatively estimated that there are at present fully five hundred cars of different kinds in the Mexican capital, the majority being of American make. The cars in greatest demand are those which do not exceed $1,500 in price at retail. The import duty varies with the weight. Up to 550 pounds the rate is 12 cents per kilo (2 1-5 pounds); between the latter figure and 1,650 pounds the rate is 10 cents, while for anything over this limit it is 8 cents. As these figures are calculated in Mexican silver, which at the present rate of exchange is not worth quite 50 cents on the dollar as compared with American money, the import duty on cars not exceeding 2,000 pounds is less than $50.

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DOUBLE PISTONS UP AGAIN

Attention Attracted to Old Principle by Unexpected Performance in a Public Test.

It is, to say the least, somewhat of an anomaly that a car fitted with a type of engine generally looked upon as little better than a "freak" should carry off the honors in a race for touring cars, under the strict fuel limitation of which many cars of standard makes went down. This is the Arrol-Johnston, made in Scotland, one of which took first place in the recent English tourists' trophy competition held in the Isle of Man, and another gained fourth place out of something like fifty contestants, eighteen



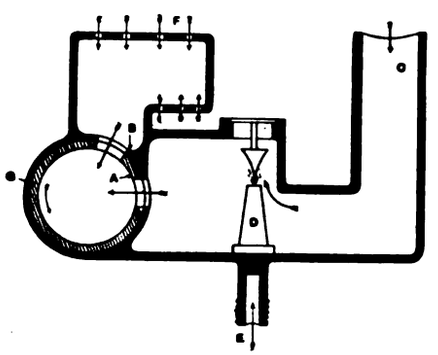
of whom qualified. This is not its only achievement, for in the Scottish reliability trials held some months ago it established the unprecedented record of 39 car miles and 43 ton miles per gallon of gasolene, in spite of being handicapped by small solid tires and a short wheel base on the type of car then built.

Concerning the cars entered in the last event, they do not, apart from the engine, differ much from current types. The motor is one that, possibly with a single exception, has never before been applied to cars regularly put on the market. Its principle is not new, as it was experimented with almost half a century ago, though not at that time developed beyond the experimental stage, so far as known. This was the Atkinson engine. Numerous experimenters have made use of the same principle with more or less modification since then, but it is not such as would appeal either to the average engineer or layman as possessing any decided advantage over the simpler and universally used single piston type. The only other car upon which it is known to have been used on a commercial scale is the Gobron-Brille, a French production, in which the engine is vertical. It is a type of which very little is known outside of engineering circles, so that a description of it will be found of interest.

In the case of the Arrol-Johnston car, the engine is set horizontally across the frame under the bonnet, with the four throw crank shaft directly beneath the two cylinders, the bore of which is 4¾ inches and the stroke 6½. There are two pistons in each cylinder, working in opposite directions, and, as will be noted from the accompanying sectional view, the explosion takes place between them, driving them apart, their movement being communicated by short rods to heavy rockers, which in turn, through the medium of connecting rods and cranks, convert it into a rotary motion at the shaft. The view in question is taken right from the end of the engine as it appears when mounted on the chassis, and thus only shows half of it, the entire mechanism shown being duplicated just behind it. Thus the engine has four pistons with but two cylinders, this arrangement with the cranks set at 180 degrees giving four impulses per revolution to the shaft. The pump shown in section in the lower right hand corner supplies the force feed lubrication.

Two cam shafts are employed, the gears for driving them being housed in the engine casing. Make and break ignition supplied by low tension magneto supplies this essential with the somewhat unusual feature of platinum tipped plugs and strikers. The inlet valves are automatic, and are placed directly over the exhaust valves, upon which a governor of the familiar hit and miss type long since discarded by designers of automobile motors acts by preventing it from opening. With a governor of this kind there is no graduation of speed, as once the limit is exceeded the tappet misses the exhaust valve stem and the latter remains closed. The cylinder being full of the burned gases of the last charge, there is but a weak tendency on the part of the inlet valve to open and no explosion follows. It is an economical method, and though coarse in its action, it can be set by hand to permit the engine not to exceed any speed from 200 to 1,100 r. p. m. At 800 revolutions the engine is rated at 18 horsepower. A gear driven pump supplemented by a fan formed of the flywheel spokes, which with the aid of a casing under the engine forces all the incoming air through the radiator, constitutes the cooling equipment.

A multiple disk clutch is employed, and, contrary to usual practice abroad, is not interconnected with the pedal or side brakes or with the engine control. Four speeds ahead controlled by a single short lever are provided, the range being 10 to 45 miles an hour. Transmission is by means of a propeller shaft, and in order to reduce the shock of the explosions a form of spring drive is



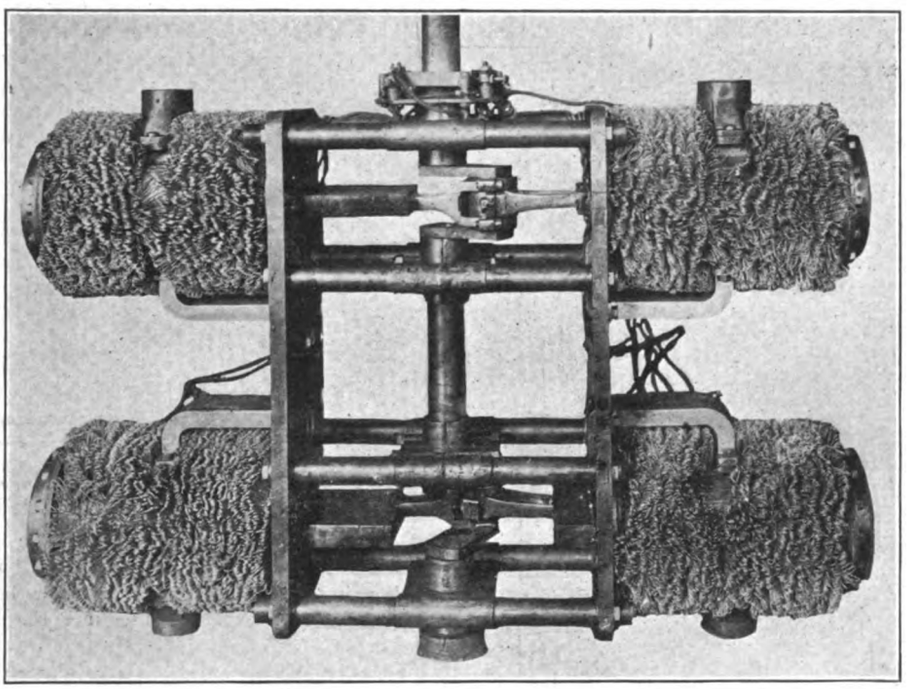
fitted close to the differential. The carburetter is also of special design, although embodying the principles recognized as being best fitted to give the result aimed at. The matter of their application will be clear from the sectional view given. It consists of the usual nozzle, the spray from which impinges against a cone, its chief feature lying in the method of supplying air. The main intake is at C, with an auxiliary at F, the relation between the two being governed by the rotary throttle G. When starting the engine the extra air port in the latter communicating with F is opposite the main port, so that a rich mixture is supplied. Rotation of this valve in the direction indicated by the arrow causes the amount taken by the engine to be decreased. At the same time the extra port opens and admits additional air until the maximum is reached, after which any further movement causes the extra air port and the main mixture port opening to be reduced, thus throttling the engine. When both ports in the valve pass the openings in the case there is a complete cut off, corresponding to the closed throttle on other carburetters. In the position shown, the throttle is fully open, so that the engine is not only receiving all the mixture the carburetter can deliver, but the latter is receiving the maximum supply of air. Further rotation in the same direction causes A to pass B, when pure air passes into the mixture chamber and so on to the engine from the extra air inlet. The ports are staggered with relation to the vertical, and one edge of the extra port is in the nature of a flap, thus insuring more gradual action and finer adjustment.

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WHY FEW AIR SHIPS FLY

Design and Construction of This Motor Supplies One of the Reasons.

When every element that tends toward safety and reliabilitly in an engine is sacrificed for light weight, the result is not apt to be sound mechanically nor in any other sense of the word. But this is in effect what the average designer of a motor for aerial navigation does, particularly when he happens to be an individual to whom the attainment of aerial navigation is everything and the motor merely an incident. But for all that, he is neither content to acquire a motor to suit his purposes by buying it of some accredited maker, by far the most economical method in the end, nor, on the other hand, to take advantage of the principles evolved by gasolene engine designers after many years' study and practice, and must needs bring forth a genesis of internal combustion engine from the depths of his own inner consciousness.



Such is the creation illustrated by the accompanying photograph, which, while not so heavy that a boy of sixteen would have any trouble in lifting it, is rated at 20 horsepower. In appearance it differs about as radically from the general conception of what a gasolene motor should look like as it does in its other essentials. In none of the latter, except those moving parts common to all reciprocating engines, does it resemble anything usual in current practice. It is, in brief, a four cylinder horizontal opposed, two cycle, air cooled motor without any crank case. The cylinders, which are 3¼ inches internal diameter, are not only turned smooth on the outside in contrast with the ribs or flanges cast on the usual air cooler cylinder, but are closed at both ends in a manner very similar to a steam engine. To insure sufficient cooling surface the smooth cylinders are tightly wound with a mass of woven wire, which gives them much the appearance of being sections of a mattress out of place. The combustion chamber is formed by the outer end of the cylinder, the pistons having a stroke of 3½ inches. Each pair of cylinders is mounted on a common base, the latter in turn being tied together by tubing at eight different points, these tubes also providing a support for the bearings.

The mixture is admitted to the inner end of the cylinder, where it is compressed by the outward stroke of the piston and is sent around to the combustion chamber through the by-pass when the port in the side of the cylinder is uncovered at the end of the stroke. These by-passes are aluminum tube of rectangular section, and will be noticed on the inside face of the cylinders, almost covered by the woven wire. In order to maintain the compression in the dead end of the cylinder, to which the mixture is first admitted, without the necessity of adding cross heads and guides, the connecting rods are inclosed in aluminum cases, which move back and forth with them. Ignition is by means of jump spark, supplied by dry batteries and vibrator coil, the secondary current from which is led to the concealed plugs through the distributor shown on the main shaft. The flywheel, which does not appear in the illustration, consists of a discarded pulley, such as are employed in numbers for transmitting power by means of belts in shops. It is about twenty inches in diameter and weighs in the neighborhood of fifteen pounds. The total weight of the engine in running order is 125 pounds, and it is designed to run at the rate of 2,000 r. p. m.

DESIGNED FOR DESERT USE

Features of a Car Built Specially for Travel in the Sand of Soudan.

As the result of extensive experiments in the use of an automobile on the desert, a novel car has just been completed for the use of the Sirdar of Egypt, who will use it on the vast sandy stretches of the Soudan. The motive power consists of a 20 horsepower three cylinder vertical engine, with a Renold silent chain transmission. The wheels are entirely inclosed by light metal side plates, leaving nothing but the broad, solid rubber tires exposed, and it is thought that the latter will remove the difficulty of getting over the surface of loose, shifting sand without becoming embedded so deeply as to impede progress. To prevent the fine grit working into any part of the mechanism the entire underbody is protected by an ingeniously devised apron.

Either kerosene or gasolene suits the engine equally well, and owing to the character of the country to be traversed provision has specially been made for a three days' supply of cooling and drinking water, as well as fuel. The change speed gear gives a range of from three to twenty miles an hour. The car will in addition haul a two wheel trailer very similar to a gun carriage, upon which will be mounted a dynamo and searchlight to be run from the car engine. This will be used for night observations in the desert. Without the searchlight carriage, the weight of the car is close to five thousand pounds.

Night Test of Agricultural Motor.

Just by way of demonstration an English agricultural motor was recently put to work at night in a field brilliantly lighted by acetylene gas, and, drawing two six-foot mowers, cut fifteen acres in three hours and thirty-five minutes. The object was to show that the motor driven agricultural machine is as efficient and satisfactory at night as during the daytime—a fact which should be of considerable importance to the larger farmer in the harvesting season, when frequently there is the utmost need of haste, and when the getting in of the crops is often delayed by the limited endurance of the horse.

Misco Evolves a Wonder-Worker.

Another motive power revolutionizer in the shape of a gas engine, which is to develop an efficiency thrice that of the motors in common use, is the recent product of the brain of a Buffalo mechanical and metalurgical engineer, Joseph Misco by name. "These are days of mergers in the financial world," says a daily paper in laudation of the affair, "but a merger of the steam engine and the gas engine is a merger of physical forces which is typical of this age of combinations in the interest of economy." It ought to run after all that!

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The Week's Patents.

800,151. Running Gear for Vehicles. William T. Hanna, Cincinnati, Ohio, assignor to Martha A. Hanna, Cincinnati, Ohio. Filed February 11, 1905. Serial No. 245,177.

Claim.—1. In a running gear for vehicles the combination of a frame consisting of longitudinal and transverse arms pivoted together at the corners, rigid frames swiveled to the ends of the movable frame, wheels journaled in the rigid frames, and means for changing the angles between the sides of the movable frame, substantially as shown and described.

800,164. Means for Loading and Unloading Motor Trucks. Thomas E. Morford and William V. Lowe, Worcester, Mass., assignors to Morgan Motor Co., Worcester, Mass., a corporation of Massachusetts. Filed March 8, 1902. Renewed April 14, 1905. Serial No. 255,654.

Claim.—1. In an apparatus of the class described, the combination of a motor truck, a crate or body therefor, a slip or way into which the truck may be run, and supports at the sides of the slip for engaging the crate or body, said supports and the surface on which the truck moves as it passes into said slip being relatively inclined to each other, whereby as the truck moves into position in said slip a crate or body will be unloaded therefrom.

800,165. Motor Truck and Means for Loading and Unloading the Same. Ralph L. Morgan, Worcester, Mass. Filed January 18, 1902. Renewed February 25, 1905. Serial No. 247,248.

Claim.—1. In an apparatus of the class described, the combination of a truck, a motor or engine for operating the same, loading and unloading fixtures mounted in position so that the truck may be run into place to co-operate therewith, and means for operating the loading and unloading devices from said motor or engine.

800,166. Motor Truck. Ralph L. Morgan, Worcester, Mass. Filed January 18, 1902. Renewed April 19, 1905. Serial No. 256,410

Claim.—In an automobile truck, adapted for carrying loads along ordinary streets or highways, the combination of a truck platform, the wheels supporting said platform, operating connections for the truck located beneath said platform and comprising an engine, a running gear and a shiftable connection for driving the running gearing at different speeds, a shaft turning with said engine, and having capstans at its ends at the side of the truck, and a jib-crane pivoted at the side of the truck-platform and arranged to swing over the truck platform to place loads thereon or remove them therefrom, and arranged to be operated from one of the capstans.

800,167. Motor Truck and Means for Loading and Unloading Same. Ralph L. Morgan, Worcester, Mass. Filed March 3, 1902. Renewed April 14, 1905. Serial No. 255,653.

Claim.—1. In an apparatus of the class described, the combination of a motor truck, a crate or body therefor, a lifting frame for supporting the crate or body so that the truck may be run into place beneath the same, with connections for the lifting frame operated by power from the motor truck.

800,191. Graphite-Lubricator. Carl W. Weiss, New York, N. Y. Filed December 12, 1904. Serial No. 236,438.

Claim.—1. A lubricating device adapted for use in connection with a chamber containing air or gas under pressure, in which the pressure of the air or gas is varied, comprising a receptacle for the dry graphite, connected with the interior of the chamber by a duct, the duct leading from the chamber to a point in the upper end of the receptacle, and terminating in a downwardly directed orifice through which orifice, on increase of pressure in the chamber, the air or gas currents enter the receptacle, and discharge downward on the graphite to cause it to float, and through which orifice, upon a decrease of pressure, the air or gas carrying floating graphite passes into the chamber.

800,268. Speed-Changing Mechanism. Conrad M. Conradson, Warren, Pa. Filed February 29, 1904. Serial No. 195,707.

Claim.—1. A speed-changing mechanism comprising in combination a gear-carrier; a driving and a driven shaft projecting therefrom; a gear upon each shaft; gearing carried by the gear-carrier and in mesh with the gears upon the shafts coupling the two shafts together and within said carrier; clutch mechanism between one of the shafts and the carrier; and cam and plunger actuated mechanism for actuating said clutch for holding the axis of rotation of such gearing and for changing the same from a fixed axis of rotation to a translationally-movable axis, and vice versa, and in both of which axial conditions all the gearing is at work.

800,273. Transmission-Gearing. Orson W. Davis, Adrian, Mich. Filed July 19, 1905. Serial No. 270,313.

Claim.—1. In a frictional transmission-

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gearing, the combination of the engine shaft, a flywheel fixed thereon, having a straight face, the driven shaft in line with and rotatable independently of the engine shaft, a band clutch to directly connect the driven shaft with the engine shaft, a friction disk slidable on the driven shaft and rotatable therewith, opposed friction wheels having straight faces adapted to engage the periphery of the friction disk, and having straight peripheries adapted to engage the straight face of the flywheel.

800,281. Automobile Ice Harvester. William Esch, sr., Chicago, Ill. Filed January 16, 1905. Serial No. 241,398.

Claim.—1. In a machine of the class described, a suitable frame, two propelling wheels mounted on a propelling shaft near one end of said frame, steering wheels mounted near the other end of said frame, a motor mounted on said frame, arranged to rotate a drive shaft mounted on said frame, a gear controlled by a friction clutch mounted on said drive shaft meshing with a gear secured to a counter shaft mounted on said frame, a vertically swinging frame pivoted on said counter shaft, a cutter rotatably mounted on the free end of said swinging frame, a sprocket secured to said cutter, a sprocket secured to said countershaft and a chain connecting said two sprockets, two bevel gears controlled by independent friction clutches mounted on said drive shaft, meshing with a bevel gear connected by chain and sprockets to said propelling shaft, means for raising and lowering the free end of said swinging frame and means for controlling the steering wheels.

800,290. Explosive Engine Starter. Emanuel J. Grace, Erie, Pa. Filed May 2, 1904. Serial No. 205,940.

Claim.—1. In a device for preventing backfiring action in explosive engine starters, the combination with the engine shaft and starting lever; of a clutch mechanism comprising a key sleeve connected with the starting lever and having a key pocket therein; a key in said pocket; a retaining sleeve adapted to normally hold said key in a position protruding from the opposite surface of the key sleeve, and being provided with a recess into which said key may move when a backward movement of the shaft occurs; and a shaft part having a recess into which said key is normally forced by the retaining sleeve.

800,307. Vehicle Tire. Albert de Laski and Peter D. Thropp, Trenton, N. J. Filed July 11, 1903. Serial No. 165,097.

Claim.—1. A tire consisting of a circular woven tubular fabric having its ends suitably secured together, threads applied to the exterior of the circular woven tubular fabric, a tread exterior to the threads, an interior inflatable tube and an anti-elongating strip within the circular woven tubular fabric.

800,308. Vehicle Tire. Albert de Laski, Peter D. Thropp and Henry Deck, Trenton, N. J. Filed December 18, 1903. Serial No. 185,629.

Claim.—1. The combination with a clincher tire having the opposite faces of its base portion inclined and soft-rubber ring applied to said inclined surfaces of a wedge-shaped annular ring of harder rubber engaged with the soft rubber annular ring for holding the latter in snug contact with the inclined faces of the base portion of the tire and means for holding the tire in position.

800,357. Vehicle Tire. Floyd Burnham. Fresno, Cal. Filed December 20, 1904. Serial No. 237,640.

Claim.—1. An improved tire composed of an outer tubular casing having relatively thin walls of substantially uniform thickness and forming an inner chamber which is concentric with the exterior of the tube, and a multistrand rope filling said inner chamber and supporting the walls of the casing.

800,366. Vehicle Tire. Charles W. Faitoute, Summit, N. J. Filed August 11, 1904. Serial No. 220,324.

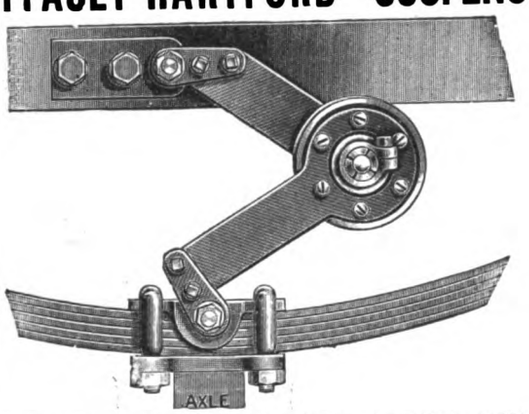
Claim.—1. The combination with a vehicle tire, a band of flexible gripping material extending around the circumference of the wheel rim between the rim and tire forming a cushion for said tire, a cup shaped washer having a continuous lower edge and held by a suitable fastening clamping said band between said washer and rim, substantially as described.

800,372. Sparking-Igniter-Starting Mechanism for Gasolene Engines. Andrew J. Haskell, West Bethel, Me. Filed November 25, 1903. Serial No. 182,571.

Claim.—1. In an igniter starting attachment for gas or gasolene engines, the combination of a hammer blow igniting mechanism, a lay-shaft actuated by the engine, a cam on said lay shaft adapted to operate the inlet valve of said engine, a latching member pivoted at one end and adapted to be engaged by said cam and to engage with the hammer-blow igniting mechanism and hold it so that when released it will act to create a spark, and means carried by the latching member for varying the time of action of said member.

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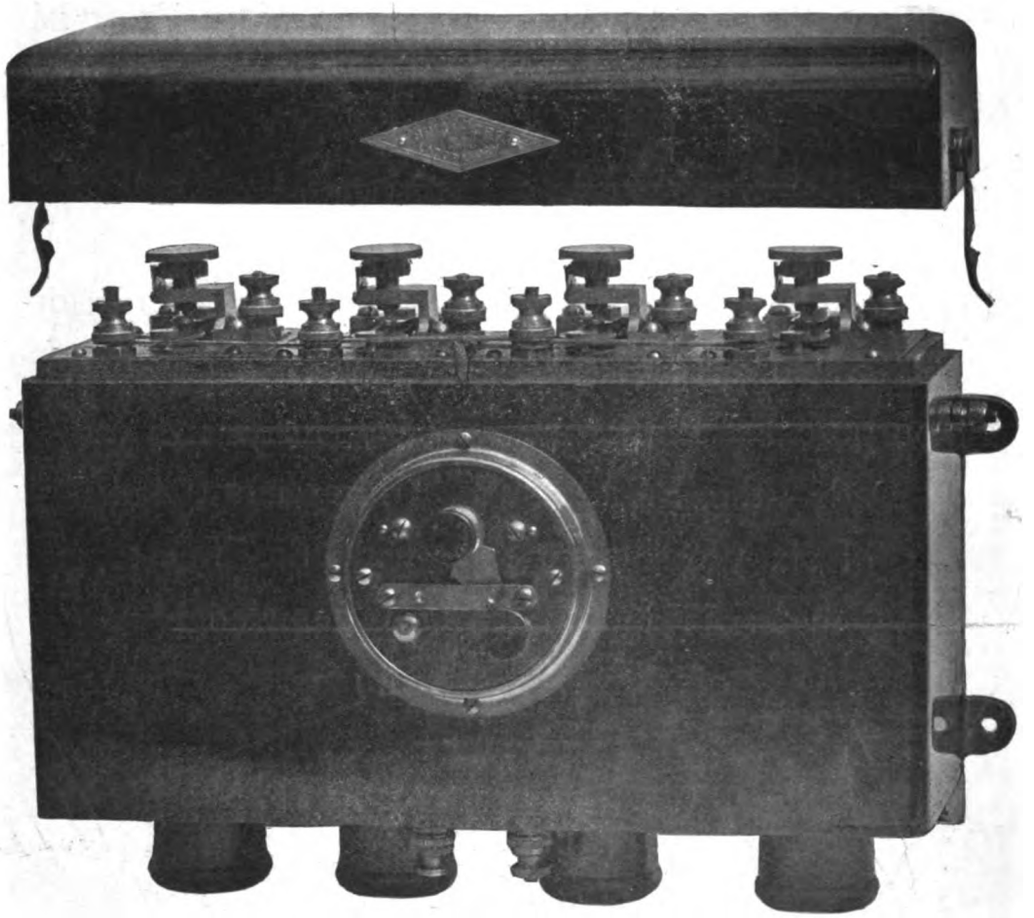
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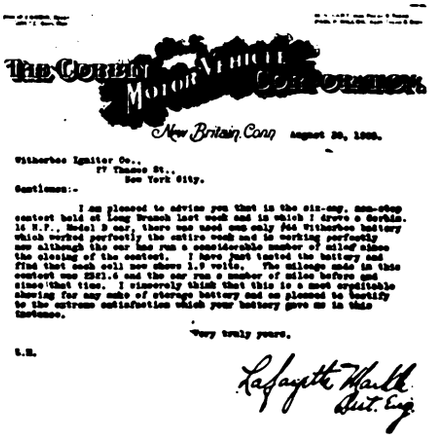
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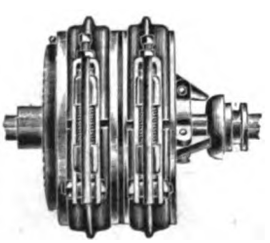
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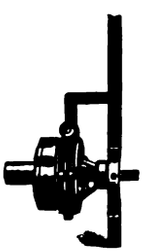
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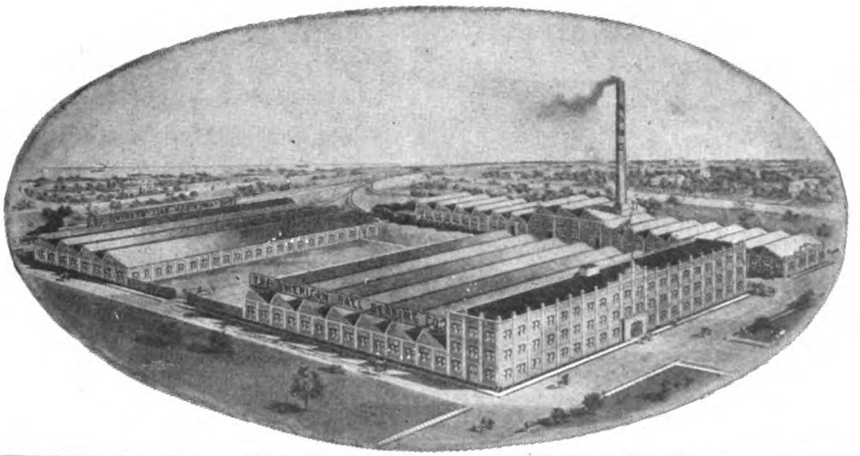
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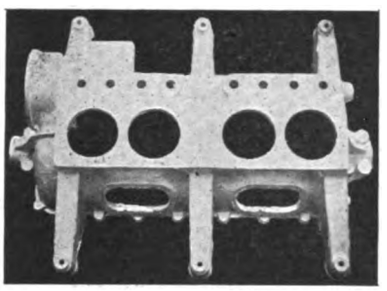


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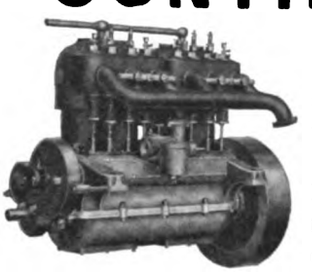
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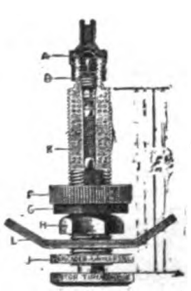
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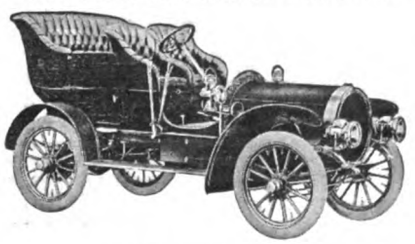
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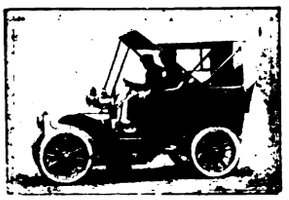
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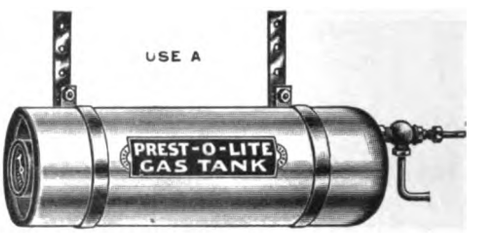
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AND AVOID ALL LAMP TROUBLES.

No cleaning of generators; No water needed; Light always ready; Light steady on rough roads; Never wears out; Tips never clog; Economical; No carbide supply to carry; Burn as many lights as desired from one tank; No waste; Safe—No leaking gas; Nothing to freeze; No attention; No odor.

GET A CATALOG.

The Concentrated Acetylene Co., Indianapolis, Ind.
Operating under exclusive license from The Commercial Acetylene Co., of New York.

Troubled with Faulty Ignition?



We are ignition specialists. Our
APPLE
Automatic Sparker
is a portable storage battery charger that cures all ignition faults. All owners of launches, automobiles or gas engines should write to-day.

THE DAYTON ELECTRICAL MFG. CO.,
91 BEAVER BLDG., DAYTON, OHIO



STA-RITE "STAYS RIGHT THE LONGEST."

Our new **MICA PLUGS**

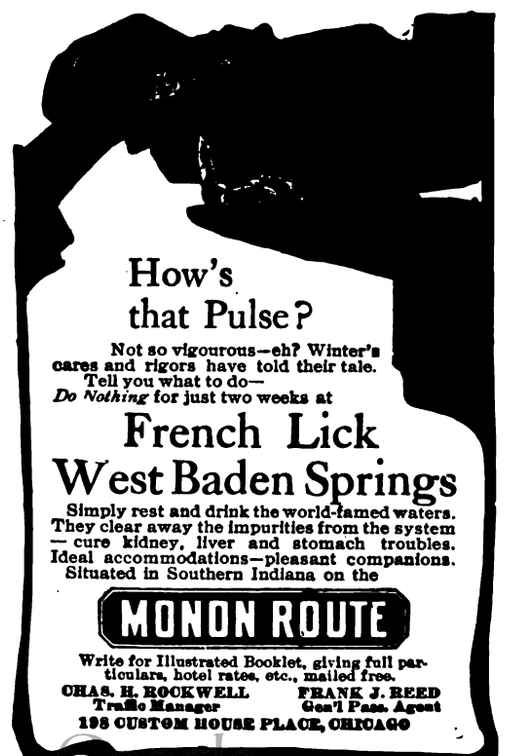
have largest air space, are practically puncture-proof and are guaranteed to stay right longer than any other mica plugs made. Price, **$1.75.**
Now a total of 26 sizes.
Plugs sent post-paid with handy wrench.

Motor Accessories.
THE R. E. HARDY CO.
225 West Broadway NEW YORK CITY

COOLERS FENDERS



HOODS EASTERN FACTORY, NEWARK, N. J. TANKS



How's that Pulse?

Not so vigourous—eh? Winter's cares and rigors have told their tale. Tell you what to do—
Do Nothing for just two weeks at

French Lick West Baden Springs

Simply rest and drink the world-famed waters. They clear away the impurities from the system — cure kidney, liver and stomach troubles. Ideal accommodations—pleasant companions. Situated in Southern Indiana on the

MONON ROUTE

Write for Illustrated Booklet, giving full particulars, hotel rates, etc., mailed free.
CHAS. H. ROCKWELL, Traffic Manager
FRANK J. REED, Gen'l Pass. Agent
193 CUSTOM HOUSE PLACE, CHICAGO

THE MOTOR WORLD PUBLISHING COMPANY,
154 Nassau Street, New York.

Enclosed find $2.00 for which enter my subscription to

The Motor World

for one year, commencing with the issue of_____

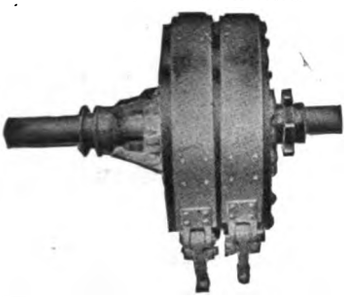
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INDIVIDUAL CLUTCH.
Two Speeds and Reverse.



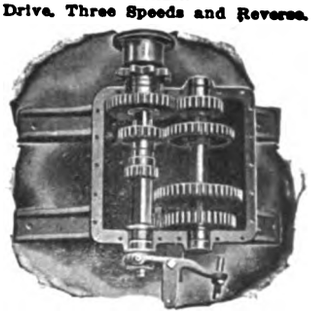
WHAT IS MORE IMPORTANT THAN THE TRANSMISSION GEARS?

What is more important than selecting the right one? We are specialists in that line. We have the know-how, the facilities and the prices.

Why Cannot We "Reason Together?"

SYRACUSE GEAR CO., - Syracuse, N. Y

SLIDE GEAR.
Direct Drive. Three Speeds and Reverse.



Kingston Carburetor.

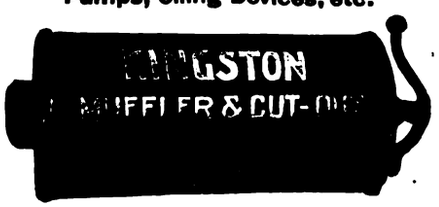
OVER 29,000 IN USE.

Patented May 12, 1903. Other Patents Pending.



KINGSTON

Carburetors, Mufflers, Spark-Coils, Spark-Plugs, Steering Wheels, Pumps, Oiling Devices, etc.



BYRNE, KINGSTON & CO., Kokomo, Ind., U. S. A.

Pat. Jan. 20, 1901.



TRADE GRADOMETER MARK.

An instrument that will enable you to determine the grade per cent. you are ascending or descending.

Sent postpaid on receipt of price, $1.50.

THE ADAMS COMPANY, Dubuque, Iowa.

We Make Good Tops.

LONDON AUTO SUPPLY CO.,

1233 Michigan Ave., Chicago.

HIGH-GRADE LAMPS

Acetylene Gas and Oil

ATWOOD MFG. CO.,

Amesbury, Mass.

MOONLIGHT ON LAKE ERIE

PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and, growing bolder, bursts forth in one pure sheen of grandeur.

Send two-cent stamp for illustrated pamphlet.

Address

D. & B. STEAMBOAT CO.,
WAYNE ST. WHARF. DETROIT, MICH.

GRAY AND DAVIS

"Makers of Smart Automobile Lamps."

Be Sure YOUR CAR is Equipped With Them.

AMESBURY, MASS



HIGHEST EFFICIENCY

COLUMBIA DRY CELLS

NATIONAL CARBON COMPANY, Cleveland, O.

Send for Catalogue.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

On Contract Basis.

Our positive power driven sight feed **OILER** will interest you. Write for description.

Auto Brass & Aluminum Co., Flint, Mich.

More Motor Luxury. Write for "Good News Book." Goodyear Tire & Rubber Co., Grove St., Akron, O.

GOODYEAR

TIRES $10 UP

We Undersell Everybody

Only $10 for new 28x2½ tires fresh from factory. Other styles and sizes in proportion.

We Do First Class Repairing

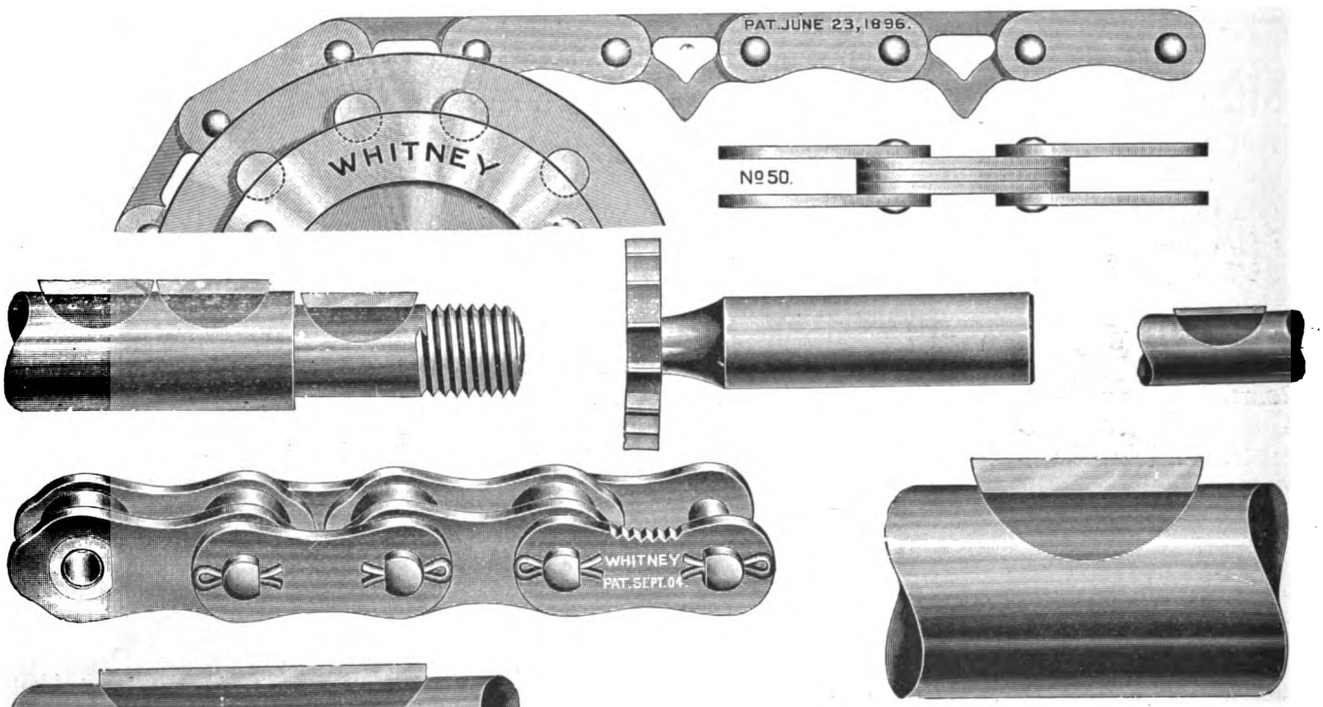
Pay freight on all tires sent us, examine and send estimate of cost of repairs before doing any work. We vulcanize, fill, retread and recover old tires. Price for for Newmast c Filli n , $5 for 28x2½ tire.

(D) **GRAHAM CYCLE CO., 601-605 Madison St., Chicago**

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WATCH THE EFFICIENT DOUBLE CHAIN DRIVE

On 1906 Model Cars with "WHITNEY" Chains.



The "WOODRUFF" Patent System of Keying

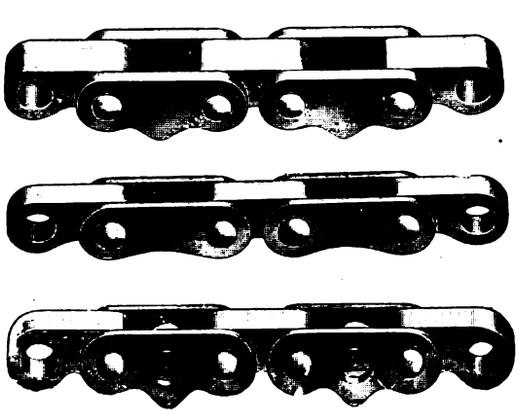
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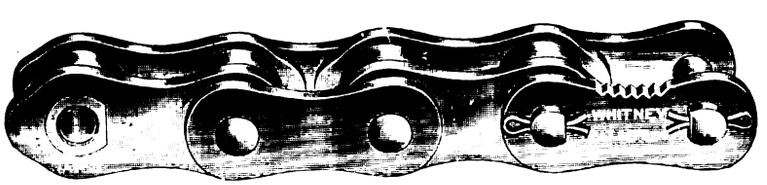
"WHITNEY" CHAINS

have been adopted by most of the leading manufacturers of

AUTOMOBILES, MACHINERY,

etc.





THE

WHITNEY MFG. CO.

Hartford, Conn., U.S.A.

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There are reasons why

MORGAN & WRIGHT TIRES
ARE GOOD TIRES

Reason 1
TOUGHNESS.

¶ MORGAN & WRIGHT cover stock is made from a compound which twenty years of tire-making has proven beyond any question to be as near invulnerable as rubber can be made and retain its rubber efficiency.

¶ It has been cut by glass, and nails have gotten thru it, but week in and week out the remarkably small number of such injuries is conclusive evidence that this stock possesses an almost incredible amount of toughness.

¶ All of which is but one good feature in a thoroly good tire.

MORGAN & WRIGHT, Chicago.

PHILADELPHIA—Cor. Broad and Vine Sts.
BOSTON—228 Columbus Ave.
CLEVELAND—347 Huron St.
DAYTON—417 E. 5th St.
DETROIT—265 Jefferson Ave.
NEW YORK—214 W. 47th St.
SYRACUSE—212-214 S. Clinton St.
MINNEAPOLIS—708 Hennepin Ave.
ATLANTA—35 Edgewood Ave.
SAN FRANCISCO—1067 Mission St.
DENVER—1562 Broadway.
ST. LOUIS—538 Vandeventer Ave.
LOS ANGELES—940 S. Main St.

Business and the OLDSMOBILE

As a business man, when you decide to buy an automobile, you naturally turn to the trim, ever-ready runabout, whose popularity among business men has won it the title of "An Office on Wheels."

It has been found that for daily use about town or even for runs into the country, the standard runabout, with its 7 h. p. single cylinder motor is the most economical to operate and gives the most efficient service.

Traveling men have adopted it both for city service and, in a number of instances, for covering territory made up of small towns in well settled sections. For example, in Southern Michigan and Northern Ohio one man has used an Oldsmobile runabout for the past three seasons in visiting 225 towns, driving in so doing 8000 miles each season.

Others have had equally satisfactory experience.

Send for Catalogue 53, giving complete particulars of our line.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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DON'T EXPERIMENT
Just Sell
THE FORD

Mr. Agent:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the agent who sells a car not up to standard loses both *prestige* and *reputation*.

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown.*

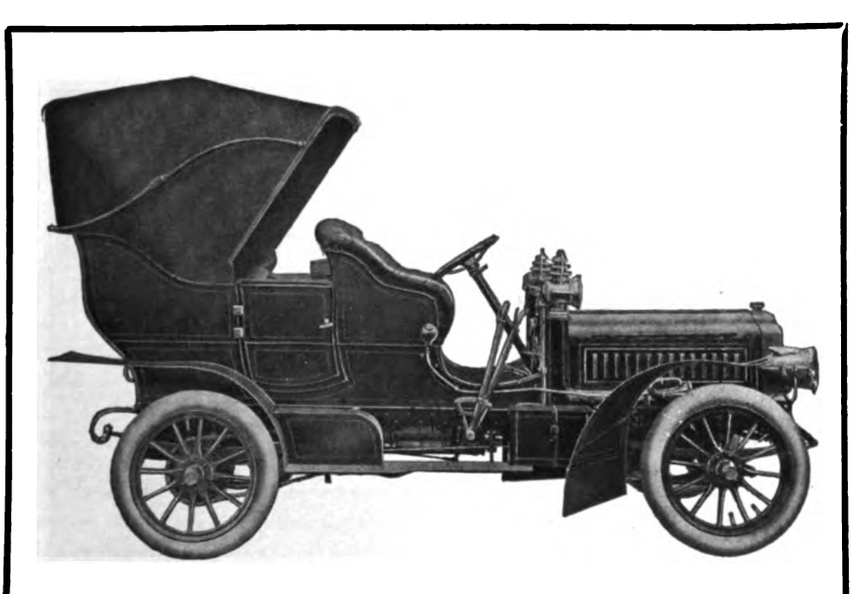
You know the general rush to the Ford exhibit at the shows, and how they all ask, *"What has Ford this year?"* plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before, except that there is certainly good business ahead for the Ford agent in 1906, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR COMPANY, - - - Detroit, Mich.

MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO.

Canadian Trade supplied by THE FORD MOTOR CO., of Canada, Ltd., Walkerville, Ont.



TANNER & COMPANY,

AUTOMOBILES, MOTOR CYCLES, BICYCLES AND SEWING MACHINES.

NEW BEDFORD, MASS., September 2, 1905.

E. R. THOMAS MOTOR CO.,
Buffalo, N. Y.

Gentlemen:—Last October I purchased a 24 horse power Thomas Flyer from a Boston owner, who told me that it had been driven 10,000 miles during 1904. Since owning this car I have covered 21,000 miles in it personally, getting over $1700.00 from renting the same, and the machine seems smoother running to-day than ever.

I have carried six and seven people in it many times on trips forty and fifty miles. Better service could not be asked or given.

Yours very truly,
WM. E. TANNER.

COMMONWEALTH OF MASS.
New Bedford.
Bristol, ss.

L. S.

Personally appeared the said Wm. E. Tanner and made oath that the above statement is true. Sworn to before me this second day of September, 1905.

CHARLES T. HERON,
Justice of the Peace.

E. R. THOMAS MOTOR COMPANY,

Makers of Thomas "Flyer" Automobile.

1210 NIAGARA STREET, - BUFFALO, N. Y.

Members A. L. A. M.

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Packard

The car that has been consistently successful in the past can be depended upon to be more successful in the future.

Each successive model has added to the Packard record for endurance and reliability and that unequaled smoothness of running.

The latest model, the New Packard 24, upon which will be concentrated every thought and every facility of the Packard factory during the coming season, has already proven itself to be the best thing we have ever turned out. On June 8th, the first car of this model made the run of three hundred miles from Detroit to Chicago in the total elapsed time of 12½ hours, running time 11 hours, carrying five to six passengers. After a night's rest in Chicago the car made the return journey on the following day, June 9th. This severe test of six hundred miles was made without repairs or replacement except to tires.

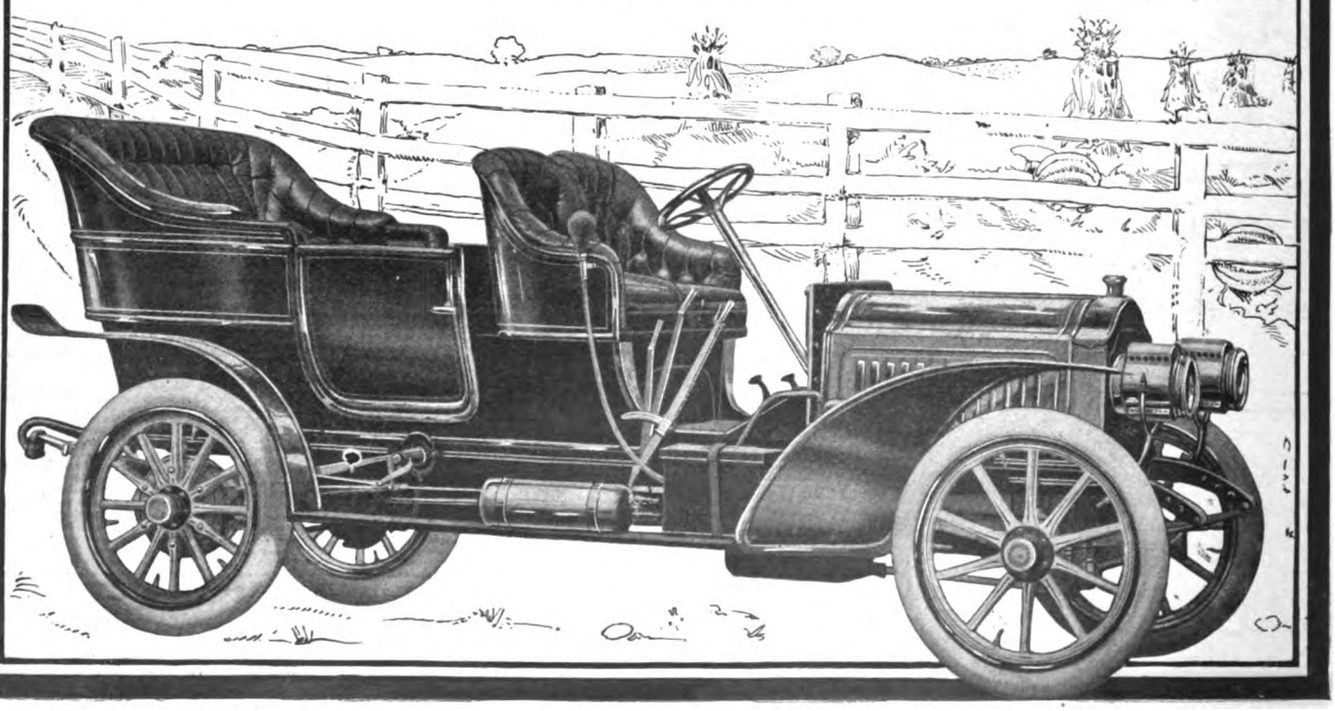
Price with Standard Equipment, $4,000.00, f. o. b. Detroit. For our catalog and name of nearest Packard dealer, address

Packard Motor Car Co., Dept. 8

Detroit, Mich.

Member Association
Licensed Automobile Manufacturers

New York Branch
1540 Broadway



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CENTAUR MOTOR CO. REPAIR ORDER No. 4528

NAME Lorenz | ADDRESS | DATE RECEIVED 8/3/05

KIND OF CAR Cadillac F | WHEN WANTED | DATE DELIVERED

Look car all over and put in shape for a run to N.Y.

INVOICE No. 10250

CADILLAC Economy

Last Spring Mr. Henry A. Lorenz of Buffalo, N. Y., purchased a model F Cadillac of the Centaur Motor Co. of that city. After running it for some months, he decided to make a run to New York City, and as a matter of precaution, took the car to the Centaur Co. to have it "gone over."

These reproductions of the repair order and the postal card sent by Mr. Lorenz on his arrival in New York, show the expense and the result.

RECORD OF LABOR. | **RECORD OF MATERIAL AND SUPPLIES.**

WORKMAN'S TIME SLIP NUMBER	NATURE OF WORK DONE	TIME HRS.	TIME MIN.	AMOUNT	STOCK ORDER NUMBER	DESCRIPTION OF MATERIALS	PRICE
6779	Tightening Connecting rod & Lightening Clutch		30	50			
6799	Adj. Carburetor		15	15			
	TOTAL LABOR.			65		TOTAL MATERIAL, ETC.	

PAID 190 | INVOICE No. | DATE | CHARGES $ .65

RECEIVED AND APPROVED. 190

Henry A Lorenz
SIGNATURE OF CUSTOMER

Dear Jess—

Got to New York last night at 7 o'clock with Cadillac and OK

Henry A. Lorenz.

New York Aug. 14 '05.

There may not be much in the Cadillac for the repair shop end of your business, but Cadillac dealers say there's a whole lot of satisfaction for their selling departments.

CADILLAC AUTOMOBILE CO., Detroit, Mich.

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The Incomparable WHITE

The Car for Service



WHITE RELIABILITY.

Did you read in the Motor World of September 14th the account of the trip of Ezra H. Fitch and his party in three White steamers through the forests of Maine and Quebec?

If a White car can be depended upon to traverse forest trails, to ford streams, to travel through a desolate region hundreds of miles from any base of supplies, can it not be relied on implicitly for such service as you require from a car?

Write for Literature.

WHITE SEWING MACHINE COMPANY CLEVELAND OHIO

"QUEEN"

The name stands for a line of cars that has no equal, either as a selling proposition for the dealer, or an investment for the individual buyer.

Staunch in construction, powerful in action, reliable in operation, and simple in control, Queen Automobiles best meet every requirement of automobile worth.

Queen Runabouts. Queen Det. Tonneaus.
Queen Touring Cars.

Made right and sold right by

C. H. BLOMSTROM MOTOR COMPANY,
Detroit, Mich.

C. A. DUBRR & CO., Inc. 1787 Broadway, New York City Agents.

Garages and Individual Owners who have had most experience use exclusively

Rome Linseed-Oil Soap

FOR CLEANING CARS.

There are mighty good reasons for it, too. They will readily suggest themselves to any one interested.

We make

Rome Linseed-Oil Soap,

put it up in barrels, half-barrels and pails, and sell it cheaper than ordinary soaps.

Send us a trial order—if not satisfactory you get your money back.

ROME SOAP MFG. CO., Rome, N. Y.

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AMONG THE LEADERS IN ELIMINATIN' RACE.

Our regular stock model finishes third in Vanderbilt Cup Race trials. Just think what we are offering you this year. It is like this. You sit behind the wheel of a **ROYAL TOURIST** with one hand on the throttle lever. Move the lever an inch or so and you have an ideal vehicle, under perfect control, for city use or country touring. Move the lever a little more and you have a motor car fit to compete with the speed machines especially built for the **VANDERBILT CUP RACE.** Please bear in mind that the famous Royal that did so well in the race last Saturday is the same as the one you buy from us in every particular except, of course, you get a luxurious and handsome body, instead of a couple of tin seats.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 434 South Fifth St., Minneapolis; AUTOMOBILE SUPPLY CO., Limited, 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.

POPE Waverley ELECTRIC AUTOMOBILES

You See Them Everywhere

The cut below shows our Pope-Waverly, Model 30. It is by far the smartest station and general utility wagon yet produced. The front seat is finely upholstered, the interior of dark green broadcloth. Gearing noiseless, "herring-bone" type, running in oil, and protected in dust-proof cases. Motor equipment consists of two 3 h. p. motors of improved design, each capable of an overload of an additional 3 h. p.

We make also

Surreys, Chelseas, Runabouts, Delivery Wagons

and other models



Station Wagon, Model 30, $2250

POPE MOTOR CAR CO.

INDIANAPOLIS, IND.

NEW YORK CITY	1733 Broadway
BOSTON, MASS.	223 Columbus Avenue
PROVIDENCE, R. I	15 Snow Street
WASHINGTON, D. C	819 14th Street
SAN FRANCISCO, CAL.	451 Mission Street

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Will you write us about the

1906 Agency for the WAYNE?

The Wayne Agency for 1906 is a good thing. The Wayne cars were extensively advertised last year in all the leading magazines and trade papers. For 1906 we have made arrangements for a campaign of co-operation with our local Agents which will mean practical assistance in selling Wayne cars. We realize that to get good Agents it is necessary for the Agent to have a proposition on which he can make money, and the Wayne agency proposition is one which it will pay you to investigate.

The Wayne line for 1906 is comprised of cars that have proved their ability to stand hard usage by three years road service.

We have not changed the Wayne principle of construction because nobody has yet been able to show us anything better tho' our cars contain all new improvements and are strictly up-to-date (no old models built over.)

Write us and find out what we have to offer, before you forget.

WAYNE AUTOMOBILE COMPANY, Dept. Q. Detroit, Mich.



PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in principal cities.

New York Agents: MAXWELL-BRISCOE, INC.

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Glad to Get Back To GOODRICH TIRES

Mr. H. C. Baxter of Walpole, N. H., in a letter of September 12, 1905, writes as follows:

"I am glad to get back to the use of your tires, after having satisfied my desire to test a foreign make, which I have found did not give me as good service on our country roads as yours, which I have used for years, have given me. I shall use your make in the future. At present I have a 24 h p. Peerless, which I am using to make business trips between our canneries in New Hampshire and Vermont."

Yours truly, H. C. BAXTER.

THE BAILEY "WON'T SLIP" TIRE.

Regular Goodrich construction, but provided with the Bailey "WON'T SLIP" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company
Akron, Ohio

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
CHICAGO, 141 Lake St.
BOSTON, 161 Columbus Ave.
DETROIT, 80 E. Congress St.
LONDON, E. C., 7 Snow Hill.
CLEVELAND, 420 Superior St.
PHILADELPHIA, 909 Arch St.
DENVER, 1444 Curtis St.



Diamond
ENDLESS SOLID SIDE WIRE TIRES

Are the equipment on leading makes of commercial motor vehicles—trucks, wagonettes, omnibus cars, and others.

Their quality is shown by their device.

We shall be glad to write you fully concerning tires of this type for any purpose for which you may contemplate using them.

THE DIAMOND RUBBER COMPANY,
AKRON, OHIO.

BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 No. Broad St.
BUFFALO—715 Main St.
DETROIT—310 Woodward Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
NEW YORK—78 Reade St.
SAN FRANCISCO—608 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
CLEVELAND—223 Huron St.

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G&J TIRES

THE STRONGEST TIRES MADE—because only the best of materials are used in their construction

THE MOST COMFORTABLE TIRES—because most resilient

THE MOST ECONOMICAL TIRES—because, being resilient, they increase the power of the engine, and reduce the consumption of fuel

THE EASIEST TIRES TO HANDLE—because no tire clamps are used

Write for Catalog and Tire Manual

G&J TIRE CO.
Indianapolis,

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

THINK IT OVER

Morris & Wilmarth,
Stock Grain, Cotton and Coffee,
32 Broadway,
New York, July 22nd 1906

Albert Wilmarth

Henry S. Morris

MEMBERS
NEW YORK PRODUCE EXCHANGE
NEW YORK COFFEE EXCHANGE
NEW YORK CONSOLIDATED EXCHANGE
BALTIMORE CHAMBER OF COMMERCE.

TELEPHONE 2338 BROAD.

PRIVATE WIRES TO
CHICAGO AND MILWAUKEE

HEAD OFFICES
1128 BROADWAY, N.Y.
191 MONTAGUE ST. BKLYN.
134 SO. 4TH ST. PHILA., PENN.

Mr. C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.
H. S. M. - G.

Henry S. Morris

ALL SIZES CARRIED IN STOCK

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request.

CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 38th St., New York. 318 & 320 N. Broad St., Philadelphia, Pa. 202 & 204 Columbus Ave., Boston, Mass. 496 Erie St., Cleveland, Ohio

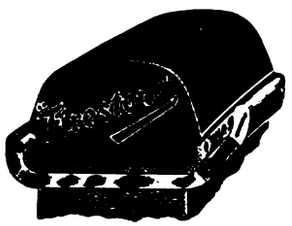
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"Firestone"

SIDE-WIRE TIRES

are used on nine-tenths of the American made commercial vehicles. Why? Because manufacturers of commercial automobiles have learned by hard experience that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.

Firestone Tires wear like iron. They hold to the Rim—they give satisfaction.

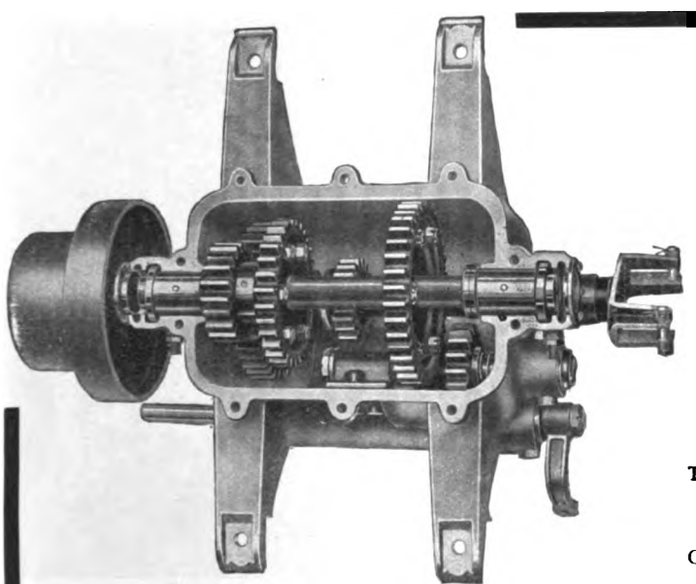


Then why not "Firestone"?

Firestone Tire & Rubber Co.

Akron, Ohio

New York Chicago Philadelphia Boston St. Louis
San Francisco Los Angeles



GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE, Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube
FRONT AXLE, I-Beam Section Nickel Steel Bed, Ball or Plain Bearing
CHANGE GEAR STEERING GEAR CLUTCH
DISTANCE ROD AND BRACKET PROPELLER SHAFT LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 H. P.
Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 H. P.

Write for Circular No. 12.

THE GARFORD COMPANY, - - - Elyria, Ohio.

Sales Manager: Hayden Eames, Cleveland, Ohio.

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Exceptional Opportunity to Purchase a BARGAIN.

Several cars used for demonstrating purposes at our factory, branches and agencies, are offered at alluring prices—if sold—**quick**. Choice of our different models is given.

These cars are perfect in every respect, but cannot truthfully be called brand new cars. Quick action on the part of an intending purchaser will result in a big bargain, coupled with the lasting satisfaction for which the "Haynes" is famous.

Write us at once.

Haynes Automobile Company,

Kokomo, Ind.

Member A. L. A. M.

New York Chicago

MICHELIN

Ninety per cent. of the world's best cars are equipped with Michelin tires.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

6 West 29th Street, New York

Telephone—4657 Madison E. D. WINANS, General Manag r

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Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
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San Francisco, 307 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street
Pittsburg, 5903 Centre Avenue.
Utica, 12-18 Lafayette Street.
Poughkeepsie, 14-20 Catherine Street.
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
Asbury Park, N. J., Main St. and Sewall Avenue.
Morristown, N. J., 1 South Street.

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CAGE OR SPACER.

STANDARD ROLLER BEARING COMPANY,

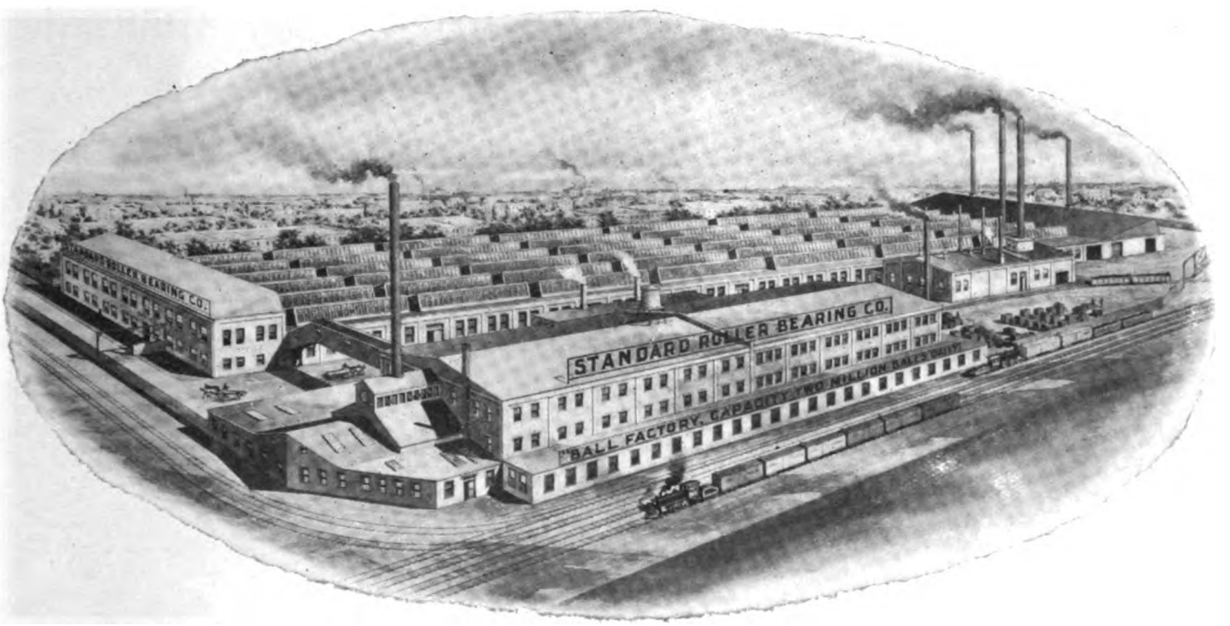
48th & Girard Avenue, PHILADELPHIA, PA.



SILENT TYPE.

Largest Plant in the World for Exclusive Manufacture of

Anti-Friction Bearings and Automobile Axles.



Total space occupied, 145,000 square feet.
Main Machine Shop, 150 ft. wide x 500 ft. long
Steel Ball Factory, 70 ft. wide x 300 ft. long, three stories in height.
Steel Converting and Tempering Plant, 50 ft. x 110 ft.
Power Plant, Engines and Generators, 800 H. P.
Steel Ball Output, 2,000,000 balls daily.



FULL TYPE.

WE MAKE ANNULAR BALL BEARINGS.

We will Positively Guarantee Prompt Deliveries.

SEND FOR ANNULAR BEARING CATALOG.



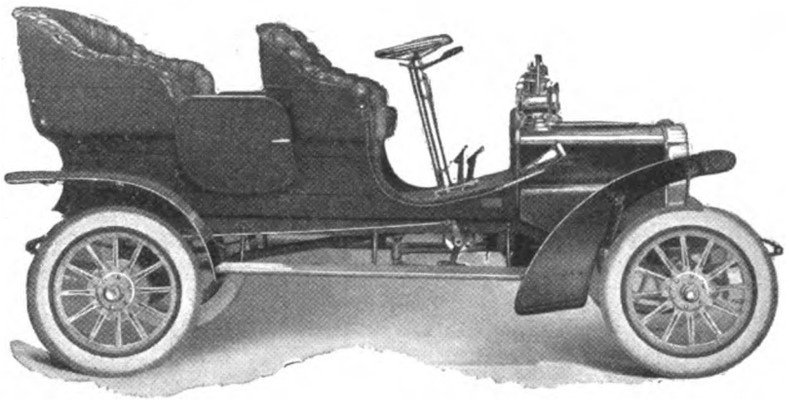
FLANGED BEARING.
(Either Full or Silent.)

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NO NOISE BONE-RACKING BELTS CHAINS PULLEYS GASKETS TRUSS RODS STRUT RODS GO WITH THE NORTHERN

ITS SILENCE AND SIMPLICITY ARE ON A PAR WITH ITS EASY RIDING QUALITIES. IT IS A COMFORTABLE CAR AS WELL AS A DEPENDABLE ONE.

Detachable Side Entrance Tonneaus Supplied if Desired.



No Delays. Immediate Deliveries Guaranteed.

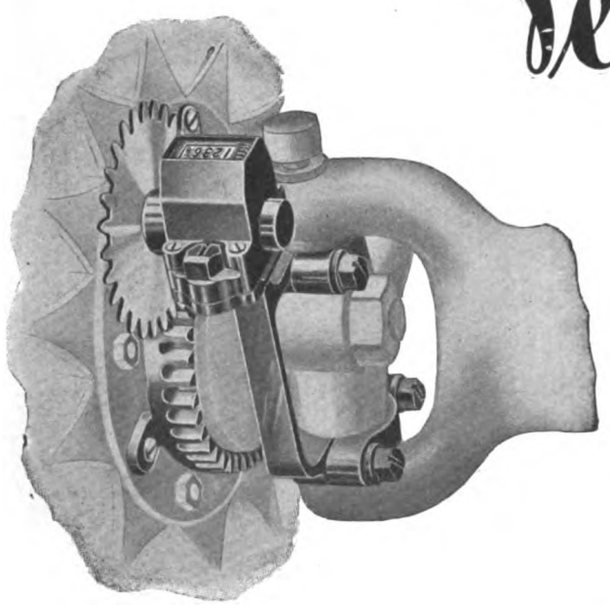
NORTHERN MANUFACTURING COMPANY, Detroit, Mich.

Member A. L. A. M.

PETER FOGARTY, New York Agent, 142 West Thirty-eighth Street.

Veeder

"It's Nice to Know How Far You Go."
Veeder Odometers.



Every Veeder Odometer we send out is designed for the particular make and model car for which it is ordered. That ***insures accuracy.***

You will want an Odometer when you go touring this summer. Ask your dealer or send to us for catalog.

THE VEEDER MFG. CO.,

26 Sargeant Street, Hartford, Conn.

Cyclometers Odometers, Tachometers, Counters and Fine Castings.

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SOLARS

SHOW THE WAY

Don't fail to see the

1906 MODEL

of

Solar Motor Lamps and Generators

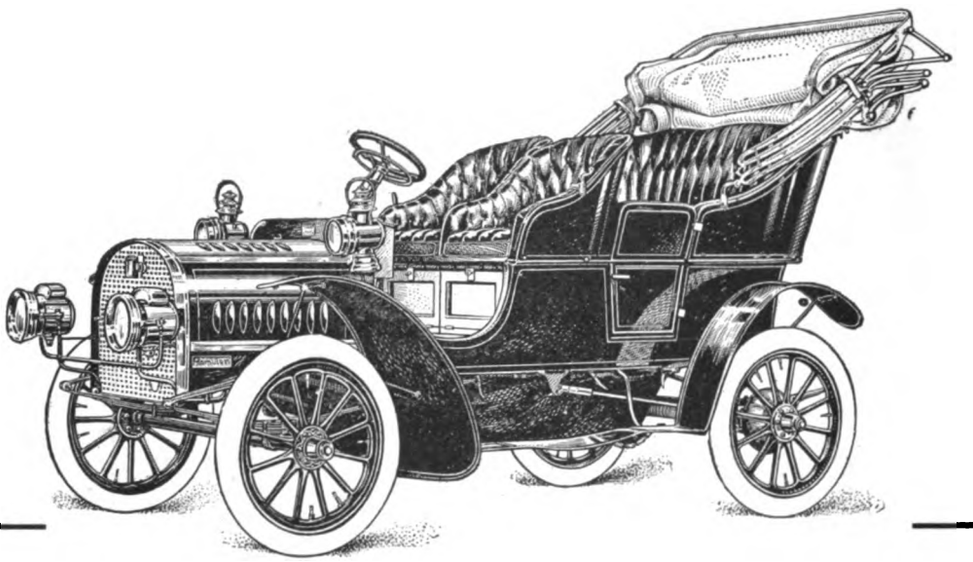
Our Parabolens Projector is the most powerful and steady light producer made, and is the only one manufactured with optically correct focus of lens, light and reflectors.
We absolutely guarantee these lights perfect.

BADGER BRASS MFG. CO.

KENOSHA - - - - - - - - WISCONSIN

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Rambler



Low Cost of Maintenance, Reliability and Splendid Appearance Makes This The Favorite Car—The All Around Car.

When it is considered that the Rambler has, in contests with other cars, demonstrated its ability to travel the same distance in equal time, consuming 40 to 50% less fuel and half as much lubricant without injury to the engine nor special effort on the part of the operator, it is not to be wondered at that so many of these cars were sold during the past season.

The sale of Surrey, Type One, will be continued in 1906 and with the improvements and refinements that have been made in this model, the demand for it at the reduced price will probably exceed the supply.

A number of these cars are ready for prompt delivery with complete equipment of lamps, horn, tools, etc., at

$1200

Cape Top, $100 extra
Canopy Top with glass front, $100 extra

We have representatives in all leading cities. Better call and ask for a copy of the Rambler magazine and a practical road test of Surrey, Type One. They are both free.

THOMAS B. JEFFERY & COMPANY, Kenosha. Wis.

BRANCHES:
CHICAGO, MILWAUKEE,
BOSTON, PHILADELPHIA.
SAN FRANCISCO.

New York Agency,
134 W. 38th St.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, October 12, 1905. No 3

WHY NO TRADE TICKETS

Reasons That Induced the License Association's Surprising Reform in Show Affairs.

Of the several radical reforms in show practices which will be brought to bear by the Association of Licensed Automobile Manufacturers at the Madison Square Garden exhibition in January, none has caused more comment and head shaking than the abolishment of the so-called "trade tickets" and coupon books of admission.

The ban placed on horn tooting, souvenir distributing and "sold" signs appear to have met with fairly general approbation, but the elimination of the reduced price "trade ticket" has excited universal wonder; prophecies that it will prove to be "a big mistake" are not lacking. However that may be, it is certain that none identified with the A. L. A. M. is greatly concerned over any possible or probable effects of their action.

"When our show committee recommended the abolishment of trade tickets," said a "man in the know' when a Motor World representative sought for the reasons that inspired such a far reaching reform, "there was as much surprise expressed and as much dubious eye lifting inside the association as is now in evidence outside of it. But when the committee gave the reasons for its proposal, I don't mind telling you that it was heartily and unanimously indorsed.

"The fact of the matter is—and nearly every one knows it—these trade tickets are simply thrown around. They are given to every Tom, Dick and Harry, and their sisters and their aunts. They are passed over the bar, they are handed to the barbers, the manicure and massage artists, the hotel bellhops and a lot more of such people who have no more interest in automobiles than they have in the creed of Confucius. It is of no benefit to the show or to automobiling to have them there.

"There was one other very good and sufficient reason that actuated the decision to abolish that form of admission: For the last show in the Garden there were sold some thirty thousand 'trade tickets,' of which number it was found that eight thousand were never used—in other words, the trade paid out $2,000 which might as well have been thrown into the gutter. When these facts were presented to the members the action of the show committee was, as I have said, immediately and heartily indorsed."

Foss and Hughes Join Forces.

W. J. Foss and Archie Hughes, managers, respectively, of the Pope Mfg. Co.'s branches in Boston and Providence, have resigned their positions, and, joining hands, are making ready to enter the business on their own account in Philadelphia. They already may be said to have made a good start, having secured the representation of two splendid lines—the Pierce and the Cadillac.

Accessory Men Appoint Allotment Committee.

The Motor and Accessory Manufacturers have constituted H. W. Chapin, H. E. Raymond, J. W. Gilson, D. J. Post and Peter Steenstrup their committee on allotment of show space. They will meet the managements of the New York and Chicago shows in this city on Thursday and Friday of this week, and will make the actual allotments early next month.

Shiland Becomes Sales Manager.

H. C. Shiland, former manager of the Chicago branch of the Buick Automobile Co., has been transferred to the main office at Jackson, Mich., where he will enter upon his new duties as general sales manager. W. J. Mead, formerly identified with the Monarch Cycle Mfg. Co., succeeds Mr. Shiland in Chicago. Shiland succeeds Charles Van Horne.

Randolph Takes on Lamps.

In addition to the Autocar, S. F. Randolph, who now has the new Autocar Co. of New York in going order at Broadway and Sixty-third street, has secured another good account—the Eastern agency for the Neverout lamps. A full stock of the lamps will be carried, as the Neverout people will discontinue their New York branch.

Kaestner in Financial Straits.

The Charles Kaestner Mfg. Co., South Bend, Ind., makers of several automobile accessories, are in trouble. A receiver has been applied for as the best way to get them out of it.

TO LESSEN TIRE UP-KEEP

How, if Manufacturers Won't Use Larger Wheels, Owners May Help Themselves.

"If automobile manufacturers would use larger wheels on their cars and automobile users would keep their tires fully inflated, very much less would be heard of tire troubles and tire maintenance," ventured an old tire man a day or two since. "Even the same diameter of tire on a wheel of greater size makes a big difference, but as nothing of the sort is on the immediate horizon, 'keep your tires well inflated' should be dinned into the ears of automobilists until there is no escaping it.

"The use of a soft tire is simply a premium on its disintegration. Compression itself implies friction, and when compressed air is kept circulating in a tire it means more friction. Friction means heat, and heat is destructive to both rubber and fabric, and there you are! When a tire is not well inflated, every bump—in fact, every revolution of the wheel that depresses the tire—sends the air shooting more or less violently around in its inclosing envelop of rubber, thereby greatly increasing the friction and the heat.

"If any one doubts the destructive effects of this sort of thing, let him experiment with a tire that is deflated to just such an extent that the inner tube will not be 'chewed up' by the abuse to which it is to be subjected. After such a tire has been given hard use, it will be found that the friction and heat generated is sufficient actually to melt the rubber; the inner tube will be found sticking together.

"'Let automobilists keep their tires well inflated, and they will save quite a few dollars in the course of a season. There's nothing so cheap as air."

Plumb Succumbs to Pneumonia.

Theodore W. Plumb, the general travelling representative of the Parrish & Bingham Company, Cleveland, and who enjoyed a wide acquaintance in the trade, died of pneumonia in that city on Monday last. His remains will be interred to-day at his old home, Meriden, Conn.

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Falcon Swoops Down on Bay City.

W. F. Flynn is a young man who firmly believes in judicious advertising. Flynn is the Michigan lad who invented the "Falcon motor car, simple in construction, silent and marvellously swift in operation. The motor indicates a power heretofore believed impossible of attainment in an engine of this size and weight, which permits the running gear of the machine to be constructed on heavier lines in order to overcome the severe shock incidental to fast driving. In addition to this feature there are a number of special features found in no other machine." Flynn wants to locate in Bay City, Mich., and as paid advertising requires considerable outlay, Flynn decided to take a lot of newspaper reporters for an outing. The result is very apparent, for in commenting editorially on Mr. Flynn's intended stock company a Bay City paper says: "Any one having money to invest in a legitimate industry which promises reasonably large returns from the outset will certainly find it to their advantage to confer with the secretary of the Board of Trade. Bay City should certainly leave no stone unturned to secure this industry."

To Make Tops and Bodies.

The Barndt-Johnson Automobile Supply Co. is the style of a new industry at Columbus, Ohio, which has just been incorporated with a capital of $25,000. The company has leased a disused plant on East Donaldson street, where, as soon as necessary alterations are made, it will begin the manufacture of automobile bodies and tops. The company thinks it will have business enough to start with, as it has already contracted to furnish the Oscar Lear Automobile Co. with all its bodies for one year. These officers have been chosen: President, C. Chris. Born; vice-president, W. E. Johnson; treasurer, Lewis Ph. Hoster; secretary and general manager, Charles Barndt; directors, the officers and Thomas E. Curtin. Johnson was for years foreman of the body department of the Columbus Buggy Co., and Barndt was chief draughtsman for the same company.

Suits Follow Order for Special Car.

Frank C. Goddard and Henry W. Howe have filed answers in the Court of Common Pleas to the suit brought against them by the Williams Foundry & Machine Co., Akron, Ohio. The suit is to compel Goddard to pay for an automobile which the company claims it built for him under contract. Goddard alleges that the company in May, 1903, undertook to construct a car for him, representing that it would be completed within three months, the cost of which was to have been between $500 and $600. He claims that the machine was not completed by May 1, 1904, and is practically useless. In a cross petition Goddard alleges that he paid the Williams company $497.02, and that because of its failure to complete the car within the stated time he has been damaged to the extent of $500.

Will Sell Cars and Make Tops.

The King Mfg. & Garage Co., Springfield, Ohio, which has been incorporated with $20,000 capital, succeeds the King Mfg. Co., which concern made automobile tops exclusively. The new company will conduct a general agency and garage business, having taken the agency in Clark, Champaign and Green for the Pope-Toledo, Packard, Cadillac, Autocar and others. A garage is being fitted up on Main street.

Morrison Gets the Ranier.

The Ranier car is about to make its debut in Boston. The agency for it has been obtained by the Morrison-Tyler Motor Co., the new concern which A. E. Morrison, former manager of the Peerless branch, has organized in that city. It had been reported that the Harry Fosdick Co. had secured the Boston agency for the Ramier, but this has proved to be not the case.

New Managers for Locomobile Branches.

The Locomobile branches in Chicago and Philadelphia are in charge of new managers—A. J. Banta and Irving J. Morse, respectively. They succeed B. G. Sykes and William Morgan. Banta was one of tht Locomobile Company's most energetic travellers, while Morse has long been identified with the company, at one time having been connected with their London depot.

French Finally Locates in Clifton.

At last has the French Automobile Co., the $100,000 Maine corporation, located itself. It will begin the manufacture of "runabouts, touring cars, jobbing trucks and marine gas engines" in Clinton, Mass., in the factory building on Main street owned by Drs. W. P. Bowers and C. L. French.

Covert May Move to Rochester.

Indications are that the Covert Motor Vehicle Co., of Lockport, N. Y., will remove to Rochester soon. Most of the stockholders of the firm live in the latter city, and for some time have been desirous of bringing the plant there.

Hinckley Gets Foss's Place.

Freeman Hinckley has succeeded to the management of the Pope Mfg. Co.'s Boston branch left vacant by the resignation of W. J. Foss. Hinckley was previously assistant manager of the place.

Phelps Out, Name Changed.

The withdrawal of Mr. Phelps from the Phelps Motor Vehicle Co., Stoneham, Mass., has led to a change of name. It is now the Courier Motor Co.

Upton Becomes the Beverly.

The Upton Machine Co., Beverly, Mass., who manufacture the Beverly car and the Upton gear, have changed their name to the Beverly Mfg. Co.

Stanley Would Appeal to the Poor.

Many statesmen, orators, playwrights, authors and other classes of men prominent in the public eye have come from Indiana, but until lately no record of an Indiana philanthropist has been kept. Now, however, that State claims to possess a man who is a philanthropist and inuventor as well. He is James Stanley, of Mooreland, who "has perfected an automobile which, Mr. Stanley is firmly convinced, will prove a boon to the poorer classes." Quite unselfish in his ambitions, Mr. Stanley is endeavoring to form a stock company to supply the poorer people with automobiles at $350 per—or less. No doubt the most worthy of the poor will be allowed to purchase a block of the stock.

Big Garage for Baltimore.

Howard W. Gill and Stanley Zell, as the Motor Car Co., of Baltimore, Md., have purchased the lot at the northeast corner of Mount Royal and Maryland avenues, and upon it will erect a garage, which, when completed, will be the largest in the Monumental City. The estimated cost is $100,000. The building will be of concrete and brick, two stories high, with 150 feet frontage on Mount Royal avenue and 160 feet on Maryland avenue. There will be four entrances. The machine shop and storeroom will be on the first floor, the latter with a capacity for 150 cars. The Automobile Club of Maryland will have its quarters on the second floor, and on which also dormitories for chauffeurs will be provided.

Bates's Offer to Madison.

Apparently the report that the Bates Automobile Co., of Lansing, Mich., would remove its plant to Madison, Wis., was too previous. It appears that the matter has not passed beyond J. S. Crosby, a professional promoter, who is still in communication with the "40,000 Club" of Madison. All the Madisonians will have to do to secure the Bates industry is to subscribe for $161,000 worth of the capital stock of $250,000.

Kilgore Removes to Boston.

The Kilgore Automobile Air Cushion Co. has removed its office from Buffalo, N. Y., to No. 46 Columbus avenue, Boston, Mass. The device was being manufactured in the latter city, and the removal is therefore a natural one. S. F. Heath, former sales manager of the E. R. Thomas Motor Co., who was interested in the Kilgore company, has taken directing charge of its affairs.

Treasurer Goes to Factory.

The auditing department of the Locomobile Company of America has been transferred from the New York branch to the factory at Bridgeport. The move, of course, carries with it Thomas M. Thomas, the treasurer of the company.

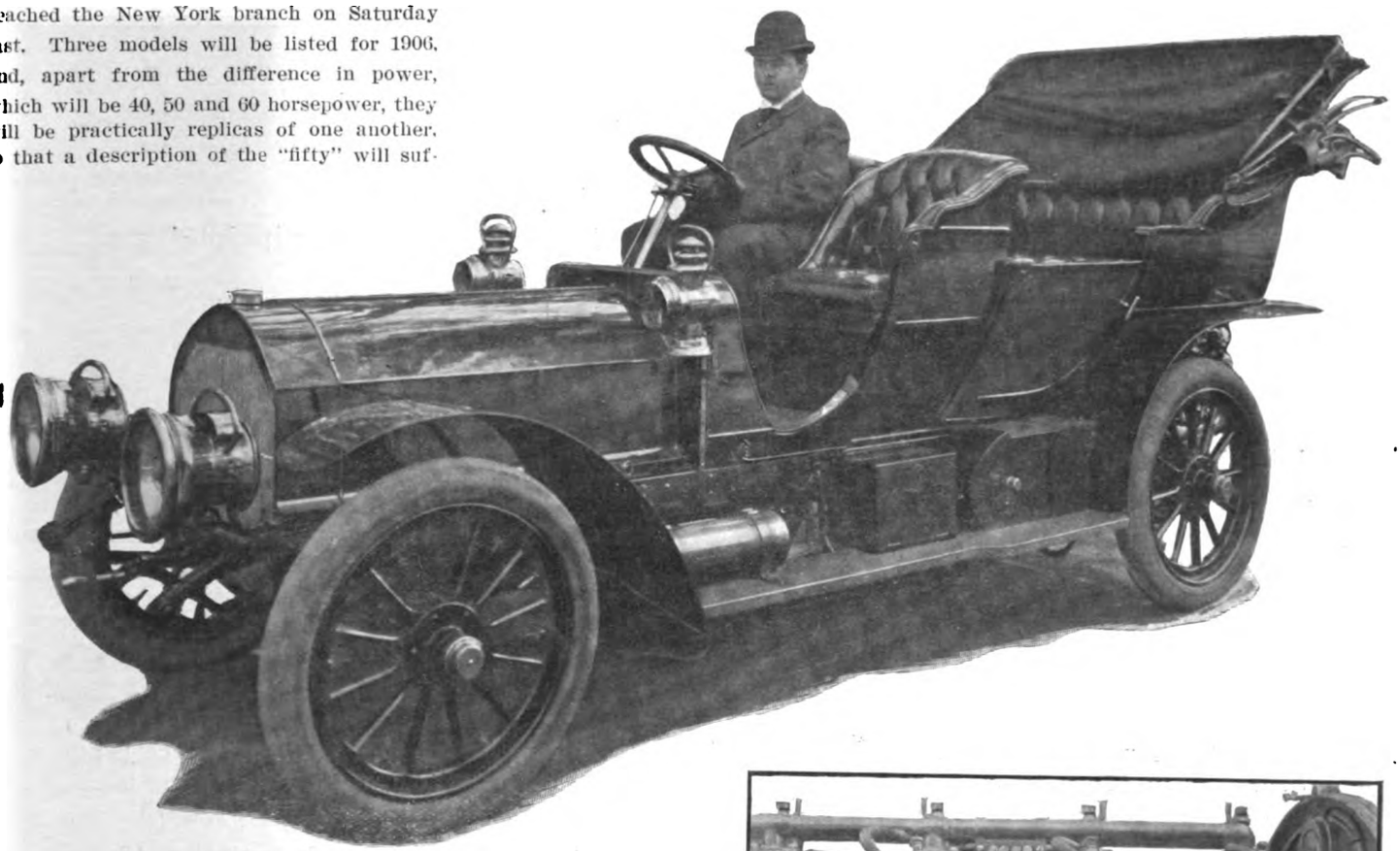
J. D. Anderson, vice-president of the Hartford Rubber Works Co., left last week on a flying visit to the Pacific Coast.

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ABOUT THE NEW APPERSONS

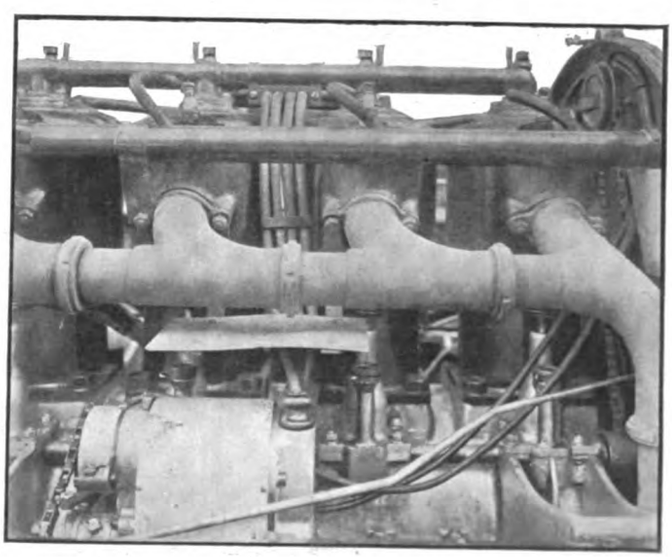
First of them Reaches New York and Discloses a Number of New Features.

Long, graceful and easy lines characterize the 1906 model of the Apperson car, which is further made particularly distinctive in appearance by the addition of an attractive maroon finish, well set off by faint shading in the striping. The first of the new cars reached the New York branch on Saturday last. Three models will be listed for 1906, and, apart from the difference in power, which will be 40, 50 and 60 horsepower, they will be practically replicas of one another, so that a description of the "fifty" will suffice to give an idea of the features that will be uppermost in the product of this concern for the coming year.



The wheel base has been lengthened to 116 inches, making particularly easy riding, while roller bearings are now used on all wheels. Four-inch tires are used on the front and 4½-inch on the rear wheels. Spring dimensions have been increased in proportion. Coming to the engine itself, this in the new model is characterized by the addition of an exhaust made of telescoping joints and unions to permit of expansion as the piping grows hot and renders dismantling of the exhaust of one cylinder easy without disturbing that of all the rest. Apart from this and the adoption of the La Coste magneto driven from the cam shaft by chain and sprocket, last year's engine was found to be so satisfactory in service that few changes were considered necessary. The cylinder dimensions of the "fifty" are 5½ inches "square"—that is, both bore and stroke are the same—and the rated output is developed at a moderate speed. No modifications were deemed necessary to the automatic carburetter adopted last year, flexibility of engine speed being attained to a degree that renders gear changing rare, the direct drive being used even in heavy traffic. Considerable attention has been centred upon making every part of the mechanism easy to get at, and the majority of the few changes in the matter of detail that have been carried out in the power plant of the new model have been with a view to greater accessibility. The pump is now located directly on the end of the cam shaft, instead of being gear driven, as in last year's model, and the crank case is so arranged that an inspection of the cranks and shaft is but the work of a moment. A set of accumulators with four vibrator coils are added as a reserve to the ignition, the distributor for this end of the system, driven by chain and sprocket, being located on the dash. The wiring of the two systems is so arranged that either or both may be used at once. Ordinarily the car is started from the seat on the battery and then switched over to the high tension magneto.

Ample seating capacity for five persons, with plenty of leg room for all, is provided in the tonneau, the lines of which are in keeping with the sightly and somewhat rakish effect given the car by the use of a bonnet longer than usually employed. With top the fifty horsepower model lists at $5,500. The "forty" at $4,500, and the sixty between $6,000 and $7,000.



APPERSON TELESCOPIC EXHAUST JOINTS.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident-Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintainance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 784-786 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 826 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 428 So. Clinton St.
BUFFALO, 806 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS, 2906 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1220 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1064 So. Main St.

A CADILLAC Dealer

Mr. C. C. Henry of Summit, N. J., who has sold over 40 Single Cylinder Cadillacs since June 15, 1905, recently placed the following four-inch double column "ad." in the two largest local papers published in his locality: —

WANTED
Second-Hand Model F Cadillac
at once. State Price.
C. C. HENRY,
Cadillac Factory Agent,
SUMMIT, NEW JERSEY.

The Jerseyman, Sept. 22, 1905.

WANTED
Second-Hand Model F Cadillac
at once. State Price.
C. C. HENRY,
Cadillac Factory Agent,
SUMMIT, NEW JERSEY.

Madison Eagle Sept. 22, 1905.

WANTED.—A Second-Hand Model F Cadillac, at once. State Price.
C. C. HENRY, Cadillac Factory Agent.

Herald, Summit, N. J.

Mr. Henry, writing under date of October 3rd, 1905.

"I did not get a single reply. No one in this country wants to dispose of their Single Cylinder Cadillacs."

The above ought to convince most any level-headed dealer that the Cadillac agency is a valuable asset.

CADILLAC AUTOMOBILE COMPANY, Detroit, Mich.

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THE MOTOR WORLD

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☞Change of advertisements is not guaranteed unless copy therefor is in hand on SATURDAY preceding the date of publication.

☞Those who are interested in motor vehicles will find the facilities and information of our office always at their command.

To Facilitate Matters Our Patrons Should Address us at P. O. Box 649.

Cable Address, "MOTORWORLD," NEW YORK.

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NEW YORK, OCTOBER 12, 1905.

Parody on Patriotism.

Apart from all other considerations, and although the "man in the street" may never give it a thought, there is one side of the Vanderbilt Cup race that cannot but at least mildly agitate the blood of the thinking American possessed of a spark of national pride—the appearance of four Americans as representatives of other nations.

For one of them there is some excuse—he is hired to drive—but for the other three—well, they may be good sportsmen, but they are mighty poor Americans. The spectacle of these three rich men—Foxhall Keene, John B. Warden and George Heath—risking life and limb in order that an American trophy may not be won by America, and that Germany or France may be able to gloat at the expense of their own country is not one that teachers will hold up to the "young idea" as an inspiring example of patriotism.

The only satisfaction that is to be derived is from the discomfiture of that other peculiarly constituted American, Clarence Gray Dinsmore. Only those who have seen this officially credited representative of the Automobile Club of America fairly throwing spasms of joy because a hired German driving his (Dinsmore's) German car had defeated Americans driving American cars in the contest for the Bennett Cup can even mildly appreciate the depth of his present disappointment caused by the failure of his German vehicle to appear on American soil in time to assist the other rich American herrs and monsieurs in the endeavor to carry the Vanderbilt Cup from these shores.

The deeds of gift of these two famous trophies are quite explicit in requiring that the cars shall be, from rivets to engines, the production of the countries which they represent, but they are in fault in not requiring that their owners and drivers also shall be of their respective soils. Such deeds may stimulate commercialism, but they make a parody of patriotism.

Possibilities of Cement.

A factor of great and increasing importance in the fine arts, and one the value of which is increasing at a most astonishingly rapid rate, is the use of cement in construction work of all sorts. Prophets who are apparently well posted on their subject predict the approach of a "Cement Age," in which this wonderfully plastic substance is to be used in place of the older forms of building material almost to the exclusion of the natural elements. Whether or not this dream is ever to have an actual literal realization, or whether the use of cement and concrete in various ways is to have an unlooked for setback, either through the development of a worthier successor or through the development of some at present unknown fault, remains to be seen, but it is apparent that at the present time its utility is undisputed.

Wherever brick and stone can be used in any combination with mortar or with the metals, cement and its solid derivative can be used with greater facility at less expense, all things taken into account, and with results which are fully as lasting. Wherever the masons of the olden time laid stone upon stone to form their bridges and their buildings, the constructors of a later age put together their molds and into them dump an unsightly mass of pebbles and pasty looking dough, which after an interval reveals on the removal of the falsework a solid form like that of the stone or brick, only without seam or joint, and solid as the everlasting hills. Into it may be woven a fabric of metal for added strength, and the very presence of the cement covering it protects it from the deterioration which shortens the life of exposed metal. Its exterior surface may be dressed into the semblance of stone or brick or wood, and it will take and hold any sort of pigment or ornamentation which may be put upon it.

In its marvellous adaptability concrete construction is lending itself to all sorts of uses, and in this way it has come to have a significance to the motorist and to the automobile manufacturer which is by no means to be ignored. There is scarcely a garage but has its cement flooring, partial or entire; many small stables are built from it, and even its utility has appealed to the maker and he has constructed his factory of the new material. On the road, sidewalks and crossings are largely made of cement, gutters and cross drains are also frequently constructed in this way, and the suggestion has even been made that it is adaptable for the construction of highways which are not to be broken up by the hoof beats of horses and that will settle the ever growing dust evil.

In all this there is much which contributes largely to the convenience of the motorist. It cannot be said that the prevalent use of cement and concrete can in any way foster the automobile movement, nor is the motor car an essential in the development of the use of cement, yet it is evident that the two industries, both young in years and each possessed of wonderfully brilliant prospects for the future, are corelated in a measure and that each must play a part in the growth of the other.

Role of the Parts Maker.

Just how important a role the parts maker has played in the development of the industry in this country is probably far from being generally recognized or appreciated.

Being a specialist, the manufacturer who devotes his entire time and attention to the production of comparatively few of the essentials of the car is in a very much better position to simplify construction and reduce cost than is the average car builder. And by the installation of a great deal of automatic machinery, such as the average manufacturer would not be justified in using the parts maker has brought about this result. There are, it is true, some concerns who come as near to turning out the complete car from tires to top as it is possible for any single manufacturer to approach, but there are, on the whole, mighty few who are not

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dependent in some way or other on the "parts man."

The advantage of this system of specializing on a few parts is the natural outgrowth of American machine shop tendencies in practically every line, and the assistance that it proves to the automobile builder is difficult to estimate. Therein lies one of the many points of superiority enjoyed by the latter over his European competitor, who must perforce turn out in his own works a very much larger proportion, if not all, of the constituent parts of his product, for it is impossible to buy them.

There is, of course, another side to the question, and that is the ease with which concerns of small capital and large pretensions can set up in the business of "building" automobiles in this country. However, while this has made such a state of affairs possible, it has not contributed to it unduly. Granted this, it must be conceded that the manufacturer of parts has done a great deal to advance the industry in this country, and will doubtless do more.

The Searchlight and the Horn.

Not once, but several times, has the Motor World condemned the use of powerful searchlights on the car, whether on the country road or not, and as much on the latter as elsewhere. The necessity for a light that would not look out of place gracing the fighting top of a cruiser certainly does not appear to be pressing, regardless of the nature of the roads to be covered.

The use of such a powerful light has more than once shown itself to be far from forming a guarantee of safety in speeding over dark and unfamiliar roads, and there are few places where it is safe to drive at all where the acetylene headlights of normal power will not suffice. On the other hand, the glare of the huge searchlights employed constitutes a menace to other users of the road. But all this has been gone over time and again, so that a repetition of the many reasons why such lights should not be used is hardly necessary. A great many of them will suggest themselves to the average observer who will give the subject a moment's consideration.

President Morris of the Automobile Club of America has now placed himself on record as being of this opinion, and advocates a law prohibiting their use on city streets, where the only possible result of their presence is to blind and confuse pedestrians. To this he registers an equally strong complaint against the growing use of loud sirens on the car, but, instead of advocating their abolition, is of the opinion that they should not be permitted unless musical, something in which he is joined by an ex-holder of the same office. Instead of the time honored "honk, honk" that has won a place for itself in the vernacular, we may be greeted with an obligato in B minor on the approach of a car. Truly, the æsthetic side of motoring is not languishing for want of attention.

Closed Cars vs. Furs.

In the early stages of the sport, only the most hardy and enthusiastic pioneers found it worth while to keep their cars out of the storage room during the winter months, and their appearance on the road approximated that of Esquimaux more closely than anything else. But winter driving has been steadily on the increase since then, and with each passing year there has been a corresponding jump in the demand for heavy furs and similar coverings sufficient to withstand the penetrating icy blasts that are felt more on the car than at any other time. Now with one accord even the pioneers who got as much glory as possible out of braving the elements at their worst have come around to the closed car, and those who would not drive formerly have found the means of making the car an all the year conveyance. The business of the furrier has suffered in consequence, and that of the carriage builder and body maker has increased correspondingly; there will be considerable difference both in the appearance and amount of comfort to be derived from the old order of covering and the new.

The Association of Licensed Automobile Manufacturers has forbidden horn tooting at the Madison Square Garden show, which will move most men who may or must attend that function to exclaim fervently, "For this relief much thanks." It is to be hoped that show promoters generally will go and do likewise; for of all the unmitigated and unnecessary nuisances that have been permitted to exist at the annual exhibitions none has been worse than the horn squawking nuisance.

Taking chances in an automobile usually amounts to betting a casual opinion against destiny, but when a man in a racing car makes a stab at a turn when the mist blows wet against his face, the odds are long and luck is generally with the "Imp of the Perverse."

The Week's Incorporations.

Worcester, Mass.—Worcester Automobile Co., under Massachusetts laws, with $1,000 capital; to sell automobiles. President—J. A. Dean.

New York City, N. Y.—The Brewster Automobile Co., under New York laws, with $10,000 capital. Corporators—C. C. Downey, H. M. Duncan and G. M. White.

Waco, Tex.—Waco Auto & Electric Co., under Texas laws, with $5,000 capital; to deal in automobiles. Corporators—M. T. Bell, S. M. Seal and B. P. Phillips.

St. Louis, Mo.—Automobile Supply Co., under Missouri law, with $4,000 capital; to make, deal in and repair automobiles. Corporators—William Mulford, E. A. Sluder and Freeman Wright.

Grand Rapids, Mich.—Auto Lorgnette Co., under Michigan laws, with $3,000 capital; to manufacture and sell automobile goggles. Corporators—John M. Himes, Augustin Hendricks and Gertrude Hendricks.

Springfield, Ohio—King Mfg. & Garage Co., under Ohio laws, with $20,000 capital; to sell automobiles and make tops. Corporators—D. K. Gotwald, Charles Klobensetter, John T. Ricks, A. F. Sparks and J. K. Williams.

Omaha, Neb.—Deright Automobile Co., under Nebraska laws, with $50,000 capital, $10,000 paid up; to buy, sell and make automobiles. Corporators—J. J. Deright, T. M. Bromwell, Max Reichenberg and L. L. Reichenberg.

Columbus, Ohio—Barndt-Johnson Auto Supply Co., under Ohio laws, with $25,000 capital; to make automobile bodies and tops. Corporators—Charles Barndt, W. E. Johnson, C. Chris. Born, Lewis P. Hoster and Thos. E. Curtin.

New York City, N. Y.—Central Park Automobile Storage Co., under New York laws, with $40,000 capital; to conduct a general garage business. Corporators—Alfred C. Rader, August C. Rader, Ralph A. Martin and Lester G. Bruggemann.

Massillon Resists Great Temptation!

Evidently the good citizens of Massillon, Ohio, have little faith in a new and approved gasolene buggy to sell for the small sum of $400. Perhaps they like their hard-earned money better. Anyway, W. E. Stone, C. H. Taylor and U. G. Smith, of Cleveland, have returned to their city after an unsuccessful effort to induce Massillonians to part with $30,000. What a pity, too, for the automobile was "a light runabout of eight and one-half horsepower, a gasolene motor, solid wooden wheels of the carriage type, with solid rubber tires, the box being set upon four springs not unlike a buggy, and would have been sold for $400 at a profit.

Trackless Trolley Man in Michigan.

F. W. Oliver, representing the F. W. Oliver Trackless Trolley Co., is in Commerce, Mich., looking into the proposition of establishing an automobile route between Pontiac and Lansing to pass through that city, Milford and Holly. He plans an hourly service. The Pontiac Board of Trade is considering his application for a franchise there.

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READY FOR BIG RACE

All Arrangements Complete and Enormous Outpouring Indicated—Keene Dodges No. 13 but Ill Luck Pursues German Team—Practice Work Promises Fastest Race Ever Run.

Given dry roads, it is evident that the man and car that win the Vanderbilt Cup in the 283 mile race over Long Island roads on Saturday next, the 14th inst., will have averaged very much better than 60 miles an hour. This fact is made plain by the performances of the men who have deported themselves on the course during the past week. Their work is limited to the early morning hours, previous to 7:30 o'clock, and "holding watches" on them has been the favorite pastime of all who are most vitally concerned in the result.

These "railbirds" have clocked 60 miles an hour or over so often that it is too common to excite remark. There are tales of one round of the pipe-shaped circuit of 28 3-10 miles in slightly more than 21 minutes, or about 80 miles an hour, by Hemery, of the French team. This speed, however, seems impossible and is generally doubted. Apparently the best authenticated lap was negotiated by Szisz (pronounced "Cease"), also of France, who is credited with 23 minutes, 30 seconds. Three watches are said to have recorded this performance. Szisz has also been timed four circuits, 113.2 miles, in 106 minutes. Nearly all of the other foreigners have also made some remarkable flights. They are a skilful, daredevil lot.

Only the Americans appear not to have let themselves out, or at any rate the "railbirds" have not placed any startling performances to their credit. The general impression is that they stand small chance of victory. Walter White, in the powerful White steamer, who appeared the most likely one to turn the trick, has been doing a lot of dawdling on the course, but seems too cautious to do the turning. As one of his adherents expressed it, "I am afraid Walter is too much of a gentleman for this sort of thing." Walter Christie has offered the one ray of hope. With one of his four cylinders out of commission, he trailed Wagner, in the big Darracq for three laps, covered in 1:18:36, or at the rate of 65 miles per hour. Christie's car is, however, a terror on tires, and even if it has the speed tire troubles or its rubber ball action is expected to give him his quietus.

The German team has already been badly crippled, making it appear that if the red-haired Jenatzy does not show prominently a victory for either France or Italy is practically certain. Germany has indeed been in hard luck. Of the four Americans and one Belgian who comprise its team, two of the former are already out of it, and owing to the non-arrival of Clarence Gray Dinsmore's Mercedes it was necessary to impress a substitute, the power of which is in no way equal to that of its mates.

When Baron de Cater's withdrawal from the team was announced, S. B. Stevens, of Rome, N. Y., promptly filled the breach. He offered his Mercedes and his driver, A. L. Campbell, and they were accepted. Then Dinsmore's car was reported not ready, and H. L. Bowden, of Boston, presented his car as a substitute. But it has been altered since it came from Germany and now incorporates some American parts. Accordingly it was re-

THE ORDER OF STARTING.

Start, 6 a. m., at one minute intervals.
Distance, 283 miles; per lap, 28.3 miles.

Start.	Driver.	Car
1.	Camille Jenatzy	Mercedes
2.	G. Duray	De Dietrich
3.	Bert Dingley	Pope-Toledo
4.	Vincenzo Lancia	F. I. A. T.
5.	Foxhall Keene	Mercedes
6.	Louis Wagner	Darracq
7.	Joseph Tracy	Locomobile
8.	Felice Nazzarro	F. I. A. T.
9.	John B. Werden	Mercedes
10.	Francois Szisz	Renault
11.	Walter Christie	Christie
12.	Emanuel Cedrino	F. I. A. T.
X.	A. L. Campbell	Mercedes
14.	George Heath	Panhard
15.	Herbert H. Lytle	Pope-Toledo
16.	Louis Chevrolet	F. I. A. T.
18.	M. Hémery	Darracq
19.	Walter White	White
20.	Paul Sartori	F. I. A. T.

No.	Driver.	Make.	H.P.	No. Cyl.	Bore.	Stroke.	Ignition	xTrans. No. spds.	Drive.	Wheel Base.	Tread.	Tires. Make
					THE GERMAN TEAM.							
1	Jenatzy	Mercedes	120	4	185	150	L. T. Magneto	4	Chain	115	54	Continental
5	Keene	Mercedes	120	4	185	150	L. T. Magneto	4	Chain	115	54	Continental
9	Werden	Mercedes	120	4	185	150	L. T. Magneto	4	Chain	115	54	Continental
X	Campbell	Mercedes	90	4	168	145	L. T. Magneto	4	Chain	107	54	Continental
					THE FRENCH TEAM.							
2	Duray	De Dietrich	130	4	190	150	H. T. Magneto	4	Chain	112	53	Michelin
6	Wagner	Darracq	80	4	6 in.	9 in.	H. T. Jump Spark	4	Shaft	106	53	xxMichelin
10	Szisz	Renault	90	4	150	160	H. T. Magneto	3	Shaft	112	50	Michelin
14	Heath	Panhard	120	4	6⅝ in.	6.8 in.	H. T. Magneto	3	Shaft	100	54	Michelin
18	Hémery	Darracq	80	4	6 in.	6 in.	H. T. Jump Spark	4	Shaft	106	53	xxMichelin
					THE AMERICAN TEAM.							
3	Dingley	Pope-Toledo	50	4	6 in.	6 in.	Jump Spark	2	Chain	100	54	Diamond
7	Tracy	Locomobile	90	4	7 in.	7 in.	L. T. Magneto	3	Chain	109	54	Diamond
11	Christie	Christie	60	*4	6¼ in.	6¾ in.	Jump Spark	2	Spur gear	96	57½	Diamond
15	Lytle	Pope-Toledo	75	6	6 in.	6 in.	Jump Spark	3	Chain	103	54	Diamond
19	White	White Steam	40	**2				1	Shaft	111	52	Diamond
					THE ITALIAN TEAM.							
4	Lancia	F. I. A. T.	120	4	180	160	L. T. Magneto	4	Chain	112	56	Michelin
8	Nazzaro	F. I. A. T.	120	4	180	160	L. T. Magneto	4	Chain	110	56	Michelin
12	Cedrino	F. I. A. T.	90	4	165	165	L. T. Magneto	4	Chain	110	56	Michelin
16	Chevrolet	F. I. A. T.	90	4	165	165	L. T. Magneto	4	Chain	110	56	Michelin
20	Sartori	F. I. A. T.	90	4	165	165	L. T. Magneto	4	Chain	110	56	Michelin

xAll cars are provided with reverse.
xxHas wire wheels

*Transversely placed at front of car.
**Compound engine.

Strokes and bores of foreign engines expressed in millimeters.



AN AMERICAN AMUSES JENATZY.

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THE AMERICAN TEAM.



DINGLEY, 50 H. P. POPE-TOLEDO.



TRACY, 90 H. P. LOCOMOBILE.

jected. On Tuesday, while practising on the course, John B. Worden, that other American millionaire whose patriotism is so great that he would assist Germany to win the cup, cracked two cylinders, and there seems small chance of his obtaining another pair in time to permit him to start. Foxhall Keene, the other of the unpatriotic American coterie, has also had his troubles. But they were mental, not machine troubles. The great big strapping American proved that he is saturated with superstition. He was alloted No. 13 in the order of starting and set up such a wail that it was silenced only when a redrawing of the team's positions was held for his benefit.

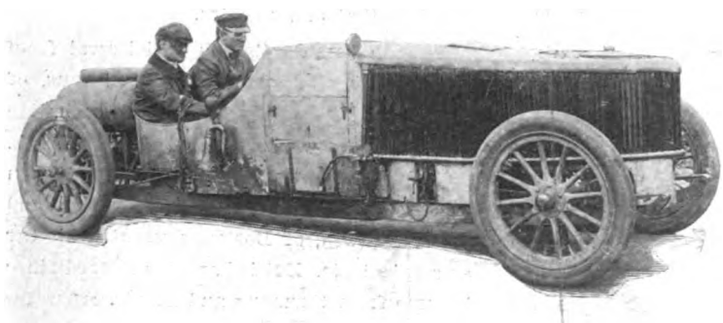
On the redrawing, Jenatzy again drew No. 1, while Keene was made happy when No. 5 fell to his lot. Warden, who previously held No. 5, got No. 9, and the Keene dreaded No. 13 fell to Campbell. The latter, however, was evidently possessed of those forebodings of ill luck which are supposed to follow that number, as it was finally eliminated altogether, and instead his car will bear the letter X, which sometimes stands for nothing. In this instance, it will stand for the mysterious fear of men who nevertheless do not hesitate to flirt with death at the wheels of the monster racing cars.



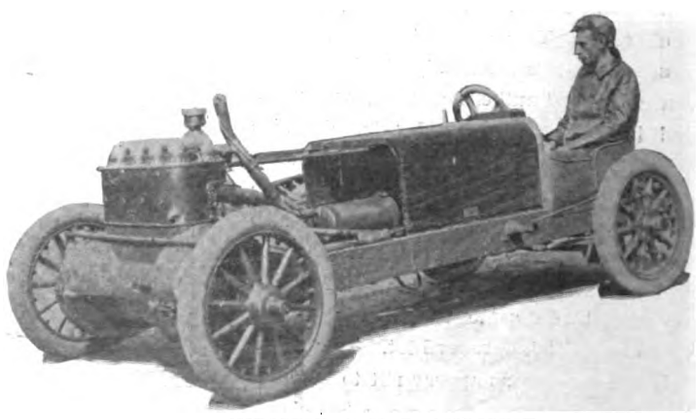
LYTLE AND CHAUFFEUR, 75 H. P. POPE-TOLEDO.

Although the Italians have not performed spectacularly, they have kept consistently at their work, and if Lancia and Nazzaro fail to finish well up in the running it will be a matter for considerable surprise. Lancia, who, until his car went wrong, was leading in the last Bennett Cup race, is most fancied. He is a rotund, moon-faced, good-natured fellow, who looks as if he hailed from the land of sauerkraut and frankfurters rather than the country where the garlic comes from. Yesterday Sartori ripped out his gears in the usual fashion—applying his clutch too quickly after making a turn—but it is expected that the damage will be repaired in season.

Several of the intending contenders have their wives with them, but none of the women appear to be so thoroughly interested as Mrs. Cedrino. The sight of that matron with rag and brush in hand, busily assisting her



WHITE, 40 H. P. WHITE.



CHRISTIE, 60 H. P. CHRISTIE.

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THE FRENCH TEAM.



WAGNER, 80 H. P. DARRACQ.



HEATH, 120 H. P. PANHARD.

husband in cleaning his car, is one of the sights of the Italian "settlement." These "settlements" are, of course, a feature of the preliminary arrangements. Each team has with them a retinue of trained helpers, and the babel of French, German and Italian which is heard when they mingle makes strange music to Long Island ears. Few of the men speak English, and the sight of Jenatzy, who is one of these, reading a red-headed "yellow extra" to the less fortunate foreigners, is one to be remembered. They appear to extract as much real enjoyment from the lurid stories of the sensational press as from anything else.

The Frenchmen and Italians had additional cause for smiles yesterday when Monsieur Michelin made it worth while to finish the race regardless of position. He cabled a prize offer of 5,000 francs for first prize, 3,000



SZISZ, 90 H. P. RENAULT.

for second, 1,500 for third, 1,000 for fourth and 750 for fifth places, while for all those who drive cars fitted with Michelin tires which finish after the fifth man there will be an award of 500 francs.

The arrest of several of the drivers for overspeeding after the early morning hours set aside for practice work has made them cautious, if it has not wholly checked their scorching. The joke of the week, however, the point of which, every one, including the victim, has shared, was the arrest of Robert Lee Morrell, chairman of the Vanderbilt Cup Commission, and temporary Poo Bah of that section of Long Island bounded by the course. It was at Morrell's instigation that traps were set to catch the scorchers, not merely the cup contenders, but the many visitors who have labored under the delusion that they were free to "cut loose," and it was



HEMERY, 90 H. P. DARRACQ.



DURAY, 120 H. P. DE DIETRICH.

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THE ITALIAN TEAM.



LANCIA, 120 H. P. F.I.A.T.



NAZZARO, 120 H. P. F.I.A.T.

into one of his own traps that Morrell fell. A chauffeur who had been arrested telephoned to Morrell for bail, and the latter made haste to answer the call. He went so fast that he was stopped by three stopwatch deputies, who did not recognize him, and who haled him before the Justice who is holding court on the spot. The result was a fine of $25.

Portions of the course are being reoiled, all bad spots repaired and the worst turns, which have been badly ploughed up by the practice work of the men, are being banked. In order to prevent the dangerous stampede on the course which marked last year's race after the first two men finished, a wire fence will be erected for a mile on both sides of the grandstand.

That the race will prove the biggest thing that ever occurred on Long Island there is every evidence. Within the past week unexpected interest in it has developed, and there is promise of a tremendous outpouring. Every seat in the grandstand has been sold, and an addition will be built in order to meet the demand. Every bed and cot in every house for miles in the vicinity of the grandstand at Mineola has been bespoken, and at prices which a month ago would have seemed fabulous to many of the more or less gentle Long Islanders, who now name their figures as though they had been accustomed to obtaining it all their lives. That many late comers will be required to sleep standing up goes without saying. The fact that the race will not start until 6 o'clock, and that the Long Island Railroad will run early morning trains at 3:35, 4 and 5 o'clock, and boats



SARTORI, 90 H. P. F.I.A.T.



CEDRINO, 90 H. P. F.I.A.T.



CHEVROLET, 90 H. P. F.I.A.T.

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REMAINS OF THE GERMAN TEAM.



JENATZY, 120 H. P. MERCEDES.



KEENE, 120 H. P. MERCEDES.

every fifteen minutes, are the relieving features of the situation. It will enable many of the New Yorkers to snatch forty winks before departing for the scene of the contest. But only the clubmen, and those who are so fortunate as to be acquainted with them, will be in clover. The Automobile Club of America and the Long Island Automobile Club will have tents erected in which breakfast will be served, while the New York Motor Club has leased a cottage for the night and will do likewise.

A casual study of the specifications of the machines which have been declared for the race reveals the interesting fact that among the twenty cars on the list but ten different makers are represented, the German and Italian teams being made up in each case of the cars of a single manufacturer, the Mercedes in the first instance, and the Fiat in the second. The French and American teams have each two cars of a single make, the Darracq in the first instance, and the Pope-Toledo, in the second, thus leaving but a single representative of the ancient and honorable house of Panhard; the Renault and the De Dietrich, for France, and on the American team only the Locomobile and the White as representatives of well known houses.

In point of design the two makes of car which are best shown are quite alike down to the last detail, the Fiat being a Mercedes copy and in many ways a betterment of its prototype. In horsepower they are all rated at either 120 or 90; all are equipped with four cylinder motors, cylinder volume being slightly in favor of the Mercedes in the 120 horsepower, and the Fiat in the case of the 90 horsepower cars. Both are equipped with the low tension system of ignition, with make and break igniters, and both are chain driven. The Mercedes cars, however, have the longer wheel base in each case.

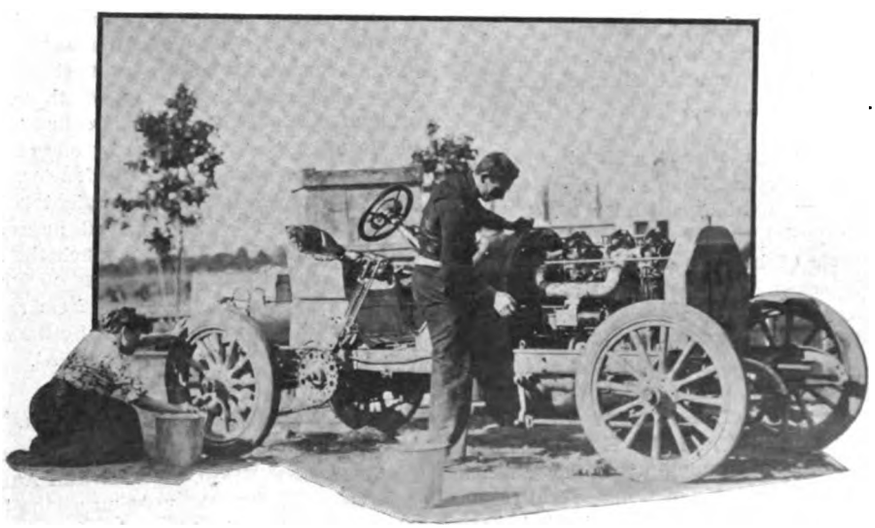
As to the salient features of the other cars, the horsepower varies from the 120 Panhard, which Heath is to drive, down to the 40 horsepower White, unique in more ways than one. Apparently among the French and American designers there is a leaning toward the jump spark method of ignition, for with the exception of the Locomobile all the cars on the two teams have one of the two high tension systems, the Frenchmen inclining toward the magneto and the Americans toward the accumulator. France exhibits but a single car having the chain drive, the De Dietrich, and America but one equipped with the shaft transmission, the method of double chain transmission holding in favor with the builders of thirteen out of the total of twenty machines. As to wheel base, the German cars have the greater length, with the Italians second, the shortest cars of all being on the American team.

In appearance the Christie, the White, Lytle's Pope-Toledo, with its long bonnet; the beetlelike Renault and the Darracqs, with their wire wheels, are the only machines which are easily to be distinguished when running at speed. Heath's Panhard has a square bonnet, to be sure, but so have the Darracqs, and when coming head on there is but little to show the difference between them, unless it be the heavy diapason of the Panhard motor.

Certain of the specifications of the competing cars will not be made public until the weighing in on Friday, notably the weights and tank capacities.

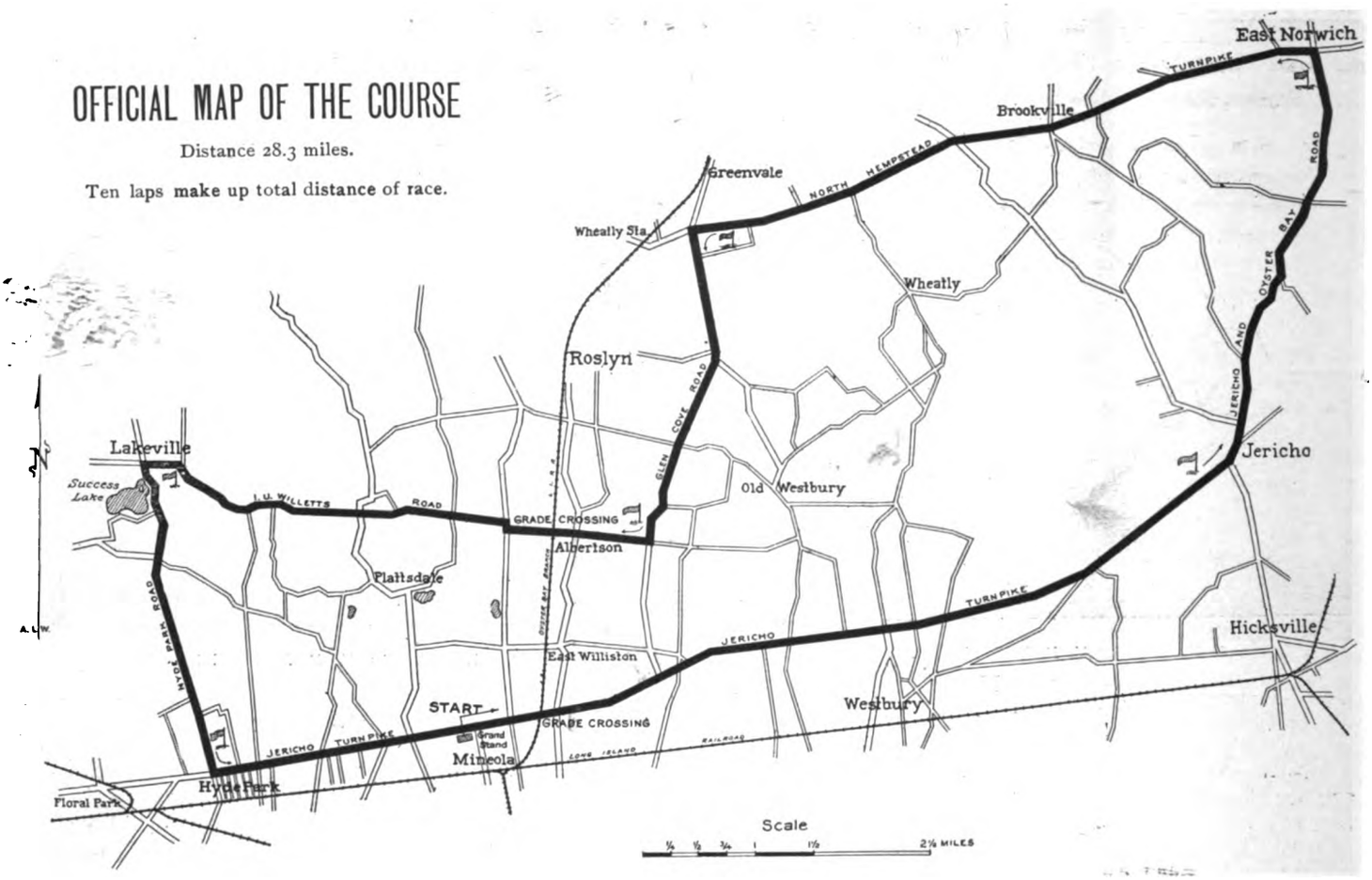
The following will be the officials of the contest:

Robert Lee Morrell, chairman. Referees—William K. Vanderbilt, Jr., A. R. Pardington, associate.



HOW MRS. CEDRINO HELPS HER HUSBAND.

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Judges of start and finish—Dave Hennen Morris, president A. C. A.; Albert C. Bostwick, A. C. A.; Alfred Wilmarth, president L. I. A. C.; F. H. Elliot, secretary N. Y., S. A. A.; L. R. Spear, president Bay State A. C. Judges of weighing in—A. L. Riker, E. T. Birdsall, R. H. White and S. A. Miles.

Timers—The Chronograph Club, of Boston; J. C. Kerrison, president; George H. Lowe, T. A. Ross, C. E. Fay, Harry McKnight and James McKnight. The Timers' Club of New York; S. M. Butler, president; C. J. Dieges, A. G. Harvey and J. P. Boyle.

Starter—F. J. Wagner, Chicago A. C.. Assistants to starter and clerk—C. H. Gillette, Hartford A. C.; Emerson Brooks, A. C. A.; G. C. Farrington, A. C. of N. J., and A. J. Picard.

Judges at turns—Brooklyn Motorcycle Club. Announcer—Peter Brunty. Engineer of course—Lieutenant Commander W. G. Ford, C. E. Special motorcycle patrol—Brooklyn Motorcycle Club. Secretary of grandstand—Alfred Reeves. Superintendent of telephone system—R. H. Burcher, N. Y.-N. J. Tel. Co.

While most of those who will reach the course per automobile will follow the crowd and go via the Thirty-fourth street ferry, Long Island City and the Hoffman Boulevard, to those who would avoid the scramble and some of the dust the Motor World recommends the route via Astoria, which is but six minutes from New York by ferry from East Ninety-second street. Follow the asphalt past the Astoria cemetery, thence the road is direct to Flushing, and, via Main street and Jamaica avenue, to the wide Highland avenue in Jamaica, where turn left and "follow the dust." The via Long Island City crowd will be encountered at this point.

The course itself will be closed to traffic from 5:30 a. m. to 2 p. m.

The New Game in Wisconsin.

A new game, not of the parlor variety like "Flinch," "Pit," "Sherlock Holmes" and the like, but one which is guaranteed to cause more excitement than any of these, has originated in Wisconsin. It is called "Catch the Motorist," and is played by one or more farmers with motorphobic tendencies. The game is simple, all that is required being a piece of barbed wire stretched across the road at a sufficient height to catch the automobilist who attempts to pass under the chin. If the motorist is pulled from the car one point is scored; if he is cut by the sharp barbs as well, two points are tallied.

A. A. A. Receives Big Accession.

Several new clubs, as follows, were admitted to membership in the American Automobile Association at the meeting of the board of directors held in the rooms of the Automobile Club of America, New York City, on Thursday of last week: The Associated Automobile Clubs of New Jersey, comprising the North Jersey Automobile Club, of Paterson; the Atlantic City Automobile Club, the Automobile and Motor Club, of Newark; the Mercer County Automobile Club, of Trenton; the Monmouth County Automobile Club, of Asbury Park, and the Hudson County Automobile Club of New Jersey. The Hagerstown Automobile Club, of Hagerstown, Md., was also admitted to membership. It was also announced that what might be termed a reciprocal automobile treaty for the interchange of club courtesies, whereby members of this and foreign clubs will be brought into more friendly and helpful relations, particularly when touring abroad, was authorized with the Touring Club of France, the Automobile Club of Great Britain and Ireland and the Motor Club of Belgium.

Springfield Club Elects New Officers.

At the annual meeting of the Springfield (Mass.) Automobile Club, held last week, the following officers for the ensuing club year were elected: President, Stanford L. Haynes; first vice-president, Dr. H. C. Medcraft; second vice-president, I. H. Page; third vice-president, George H. Bausch; fourth vice-president, Frank E. Bocorselski; secretary, J. W. Norcross; treasurer, W. L. Bunker; directors, H. G. Farr, H. C. Martin, F. S. Carr, Mark Aitkin, W. A. Ford, Dr. V. J. Irwin and M. T. White.

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SMALL ROW AT ROCHESTER

Soules Makes Fastest Time in Hill Climb, but His Amateur Standing is Questioned.

Approximately one thousand people, a small crowd, perhaps, but not the less enthusiastic, witnessed the first hill climbing contest ever held in Rochester, N. Y., which was promoted by the Rochester Automobile Club last Saturday afternoon, 7th inst. The event was held on the Dugway hill, half a mile long, with a grade of 8 per cent. The fastest time of the afternoon was made by one of the Soules brothers, who drove F. E. Woodworth's 30 horsepower Pope-Toledo. He covered the distance in 48 seconds, which is excellent time, considering there are several turns in the road. It is likely, however, that Woodworth's car will be disqualified, as the events were supposed to be open to amateurs only, and it is well known that Soules, whether he be George or Charles, belongs in the professional class.

The next best time in Class A, for cars between 32 and 50 horsepower, was also covered by a 30 horsepower Pope-Toledo, driven by Stoneburn. He made the ascent in 0:52½. Hart, driving a 28 horsepower Pierce, won the cup offered in Class B, for cars of 22 to 30 horsepower, making the climb in 1:00 flat. F. E. Mason, 20 horsepower Premier, was second, in 1:05½.

Ten cars were sent off in the event for machines rated from 16 to 20 horsepower, and a "Sixteen" Premier, with Hart at the wheel, took the honors, making the climb in 1:06, although he was hard pressed b E. I. Taylor, who drove a 16 horsepower Ford. Taylor's time was 1:08 1-5. R. Roberts, 16 horsepower Reo, finished third. In the class for cars up to 12 horsepower, the Ford runabout, driven by E. I. Taylor, scored a victory, making the ascent in 1:14. Peter Hauck, 12 horsepower Franklin, was second. In all there were twenty-seven starters, and as each car was sent up the incline just as its predecessor finished, and as no accidents occurred to mar the meet, it may be said to have been highly successful. The summary follows:

Class A—32 to 50 Horsepower.

Soules, 30 h. p. Pope-Toledo.....0:48
Stoneburn, 30 h. p. Pope-Toledo.....0:52½
W. F. Schafer, 50 h. p. Thomas.....0:58½
B. M. Richards, 30 h. p. Thomas.....1:02 4-5
G. W. Hirkover, 32 h. p. Royal.....1:11¾
J. Moynihan, 32 h. p. Pierce.....1:26 4-5

Class B—22 to 30 Horsepower.

L. J. Hart, 28 h. p. Pierce.....1:00
F. E. Mason, 20 h. p. Premier.....1:05½
H. K. Elston, 24 h. p. Pope-Toledo...1:07 3-5

Class C—16 to 20 Horsepower.

F. E. Mason, 16 h. p. Premier.....1:06
E. I. Taylor, 16 h. p. Ford.....1:08 1-5
R. Roberts, 16 h. p. Reo.....1:13
F. Dalzell, 16 h. p. Elmore.....1:18 1-5
R. T. Snapp, 16 h. p. Reo.....1:19 2-5
F. Dalzell, 16 h. p. Reo.....1:24 4-5
W. Williams, 16 h. p. Jackson.....1:27 4-5
J. S. Bingman, 16 h. p. Marion.....1:33 2-5
G. B. Selden, 16 h. p. Columbia.....1:37
A. L. Becker, 18 h. p. Wayne.....2:07 3-5

Class D—8 to 12 Horsepower.

E. I. Taylor, 12 h. p. Ford.....1:14
Peter Hauck, 12 h. p. Franklin.....1:16
R. Gorsline, 12 h. p. Franklin.....1:19
Dr. Graham, 12 h. p. Ford.....1:20½
R. T. Ford, 12 h. p. Franklin.....1:21
F. Dalzell, 8 h. p. Cadillac.....1:25 4-5
H. G. Strong, 10 h. p. Franklin.....2:52
Wackerman, 6½ h. p. Pierce Stanhope.3:56

Atlanta Now Has a Club

Fifty-two automobile owners in Atlanta, Ga., have formed the Atlanta Autotmobile Association, with these officers: President, J. P. Stevens; vice-president, J. H. Nunnally; secretary-treasurer, Charles Elyea; directors, E. H. Inman, W. H. Kiser, H. M. Ashe, Reuben Arnold, R. L. Cooney, C. H. Johnson and Dr. F. W. McRae. The work of forming a constitution and bylaws, making application for a charter and applying for membership in the American Automobile Association was left to these officers

Three Tickets in Chicago.

Chicago's fight for municipal ownership does not interest members of the Chicago Automobile Club half as much as the coming club election. There are three factions, and there will be three tickets in the field next week, when nominations are made. The factions are called, first, the Peacemakers, now in office; second, the Anti-Commercialists, who would oust every member connected with the trade from the club's roster, and lastly, the Radicals, who will fight unjust legislation.

'Frisco Women Form a Club.

San Francisco, Cal., now has a woman's automobile club, organization having been perfected last week. One of the alleged bylaws of the Woman's A. C. of San Francisco succinctly states that no men will be allowed to accompany the members on club runs. Mrs. A. J. Marsh is president, Mrs. F. Linz vice-president and Mrs. J. Gabriel secretary and custodian of funds.

Circus Stunt New Style.

While W. F. Norwoldt, F. W. Winnett and some one connected with the Southwestern Garage Co., of Los Angeles, Cal., were laughing at the antics of a clown, their cars, which had been left outside the circus tent, mysteriously disappeared. According to late reports, neither the culprits nor the stolen cars have yet been discovered.

Economy Test Postponed One Week.

Announcement has been made by the New York Motor Club that its first economy test has been postponed from the week beginning October 23 to the week of October 30. Up to Tuesday night eight cars had been entered, six of which are air cooled.

DEFEATING POLICE INDUSTRY

London's Story of Scouts Employed to Locate Traps and to Warn Motorists.

"Bobby" and his backer, "the J. P.," have overdone the thing, and as relief is apparently not forthcoming through the regular channels, though Parliament has been petitioned ad libitum, English automobilists have reached the limit of endurance and are banding together to fight their persecutors on the ground and in their own way, with results that are, to say the least, amusing. According to a cable from London, there has been appointed a committee, comprising a number of prominent automobilists, and the latter has in turn organized a campaign against the police and their underhand methods, and, incidentally, to hold up the police trap to ridicule. Several complete routs of the bluecoats on Brighton and Plymouth roads have already taken place. The automobilists' force is divided into scouts and patrols. The duties of patrols include the observance and report of any incident of interest, the offer of assistance to automobilists who have broken down, the warning of all drivers who may be travelling too fast, and the collection of numbers of cars and names of witnesses in the event of collisions with the police.

The scouts are professional racing cyclists, whose business is to find the police traps, keep in touch with the patrols, and convey warnings and information to drivers with all speed. They will make a full report to the committee of the association, so that the latter can survey traps with a view of exposing their futility before the coming royal commission on automobiles.

The methods pursued by the scouts in circumventing the police are as follows: Immediately the news of a police trap is brought in by the patrol a pair of scouts are sent out. They approach the spot and by carefully searching for footprints are enabled to locate the probable position of the trap. They then make a detour and get behind the position, and more than likely will then be rewarded by the sight of two bulky policemen crouching in undignified attitudes at the distance of a furlong from each other.

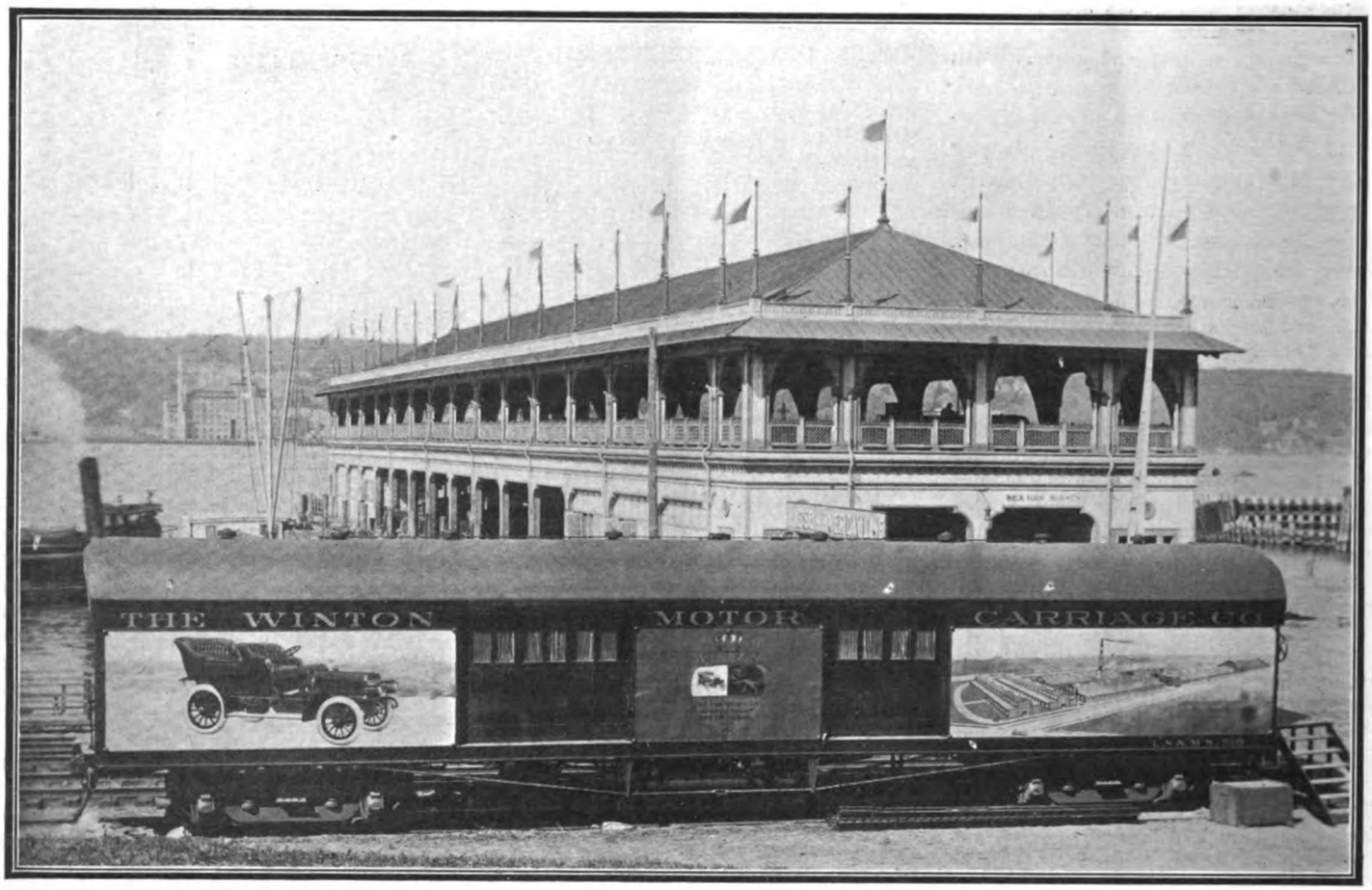
A plain clothes man will probably be seen on the road wearing a pantomime beard, smock frock and regulation boots, which he struggles to hide. Then the scouts dart away and warn all cars as they come along the road.

The scouts do not give the plain clothes man on a bicycle a chance. They easily pierce his disguise and cling to his heels to watch his every movement.

The great objection of automobilists to these traps is that they are, in nine cases out of ten, worked in places where there could be no possible danger to any living creature from automobiles. They are seldom placed in dangerous parts of the road or in villages.

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How the Winton Will Cross the Continent.



"Winton's Own Automobile Show" came to New York on Thursday of last week and remained for three days, when it took wheels for Philadelphia. While in New York it held its doors open in the railroad yard at One Hundred and Twenty-ninth Street and North River. The accompanying illustration gives an idea of the striking structure in which the "show" was housed. Within it were displayed a highly polished chassis and a complete touring model of the 1906 Winton—Model K, as it will be styled. The interior of the "show building" was handsomely finished in white and gold and was illuminated with 200 incandescent lights. In one end of the car a well appointed office is laid out, which is presided over by C. B. Shanks, sales manager of the Winton Motor Carriage Company, who will accompany the "show" on its travels across the continent. The novel "show" had already visited Detroit, Buffalo, Rochester, Boston, and from Philadelphia will go to Pittsburg, Columbus, Cincinnati, Indianapolis, St. Louis, Chicago, Milwaukee, St. Paul, Minneapolis, Omaha, Kansas City, Denver, Salt Lake City, San Francisco and Los Angeles.

Here's a Sweet Story.

In these days of rapid construction, says United States Consul Atwell, Roubaix, France, it will be reassuring to learn that extended time is no longer required to place well seasoned wood on the market. It is claimed that the process invented by Mr. Powell, an Englishman, gives artificial age to wood. He replaces the sap of trees by beet sugar or saccharine, which acts as a preservative of the wood by driving the natural humidity from the fibres.

The following is the method employed; Newly felled wood is laid on a wagonette, which is rolled into a huge cylinder, the interior of which is provided with pipes. Either hot or cold water, as occason requires, may be introduced into these pipes. The wood having been placed in the cylinder, the latter is supplied with sugar or saccharine. Hot water is then forced through the pipes. The contact of the heat boils the sugar, which penetrates the pores of the wood. The cooling process is accomplished by a current of cold water forced through the pipes. The cylinder is emptied of the sugar or saccharine, and the wagonette, with its burden of wood, is rolled into a special room, where it is dried by currents of hot air. After being cooled again, the wood, properly seasoned by the sugar, is ready for use. It is said not to spring or gather dampness, and to be proof against destruction by insects.

The Great Western Railway Co. of England now has in its service no less than eighty motor omnibuses running in various sections of its system, and they have given such great satisfaction during the period of their use that the company has made them a fixture in the feeder service which is essential to the proper working of a great railway. And yet the territory covered by the road is no larger than that of the average railroad of the United States.

Welding Steel to Iron.

In welding steel to iron, fork the iron and insert the steel. As the iron requires to be at a higher heat than the steel, insert it in the fire earlier. In very particular work some smiths use separate fires, charcoal for the steel and coke for the iron.

Borax, to be used for welding, should first be melted and then ground up. The following compound makes an excellent flux and is readily prepared: Borax, 8 pounds; sal ammoniac, 1 pound; yellow prussiate of potash 1 pound. Dissolve all together in water, and then evaporate them to dryness at a gentle heat, stirring constantly.

In general, the forms of iron may be grouped by the amount of carbon contained. Wrought iron and machine steel have from 1-100th to ½ per cent of carbon, the two differing in grain and method of manufacture. Tool steel has from ½ to 1½ per cent, and cast iron from 2⅓ to 4⅓ per cent of carbon.

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ANNOUNCEMENT

The 1906

Rainier

30-35 H. P.

has arrived. Come and inspect, ye automobile experts—you who really appreciate beautiful workmanship and design and you will admit that at last THE American automobile has come. Look over the following specifications, then call and try the car.

Engine.	30-35 H. P., 4 cylinders, water cooled.
Ignition.	Sims-Bosch Magneto—make and break spark.
Transmission.	Sliding train. 3 speeds forward and one reverse.
Rear Axle.	Bevel gear drive, clutch driven hub. Ball bearings.
Front Axle.	I Beam section. Ball bearings.
Frame.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.
Wheel Base.	104 inches.
Wheels.	Imperial whalebone, grade A 2nd growth hickory.
Tires.	Continental 34 x 4.
Valves.	Mechanically operated, inlet and exhaust interchangeable.
Carburetter.	Float feed, requiring no adjustment.
Brakes.	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
Body.	Full aluminum, double side entrance.
Equipment.	Two head lights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000.

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinder—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body.

Price, $3,500.

BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

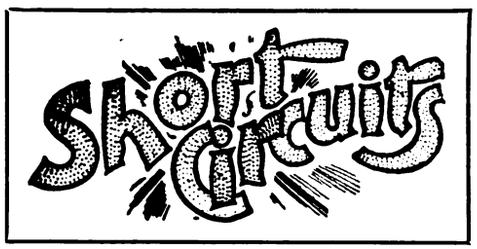
The world's broadest and most liberal automobile guarantee. Landaulet bodies for immediate delivery. Limousines for October and November delivery.

THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Boston Agents. MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.

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Papers of incorporation have been taken out by the Granite State Automobile Club, of Manchester, Vt.

A rusty place on the rim of a wheel is likely to cause a cut in the tire. Rims should be kept covered with paint or enamel.

Lowell has another claim to being the model city in Massachusetts. Thus far this season not an automobilist has been arrested for excessive speeding within the confines of that city.

Before starting on the next instalment of his "round the globe, to be continued" tour C. J. Glidden will deliver a lecture before the Boston Y. M. C. A. automobile school on his exploits to date.

The Minneapolis Automobile Club has announced its intention of "spreading itself" by putting up a cup, surpassing the Vanderbilt and Glidden trophies in design and cost, to be contested for annually at the Florida tournament. It will be called the Minneapolis Cup.

"Wonders will never cease!" Glencoe Village has passed an ordinance extending the speed limit for automobiles from eight to fifteen miles an hour. Hostilities between the Chicago Automobile Club and the village authorities will probably now be brought to an end.

Dr. A. A. Sidler wants the city of Milwaukee, Wis., to pay for his automobile. He alleges that on September 22 he ran into a manhole on Trowbridge street, which was twenty inches above the street level. Dr. Sidler claims his car was totally ruined, and therefore demands $975 for damages.

Rapid transit will be a certainty in Nyack, N. Y., and its environs if the promoters of the Rockland County Stage Motor Co. meet with sufficient encouragement from the business men of the place. It is proposed to establish a line of motor cars on the route between Upper Nyack and Sparkill and to West Nyack.

Hereafter Amesbury (Mass.) merchants will have to open their boxes some place other than on the sidewalks. Automobilists have complained to the police department that the merchants open the boxes and then throw the nails into the street, wreaking damage to tires. Officer Moison has been detailed on the case.

"Automobile Day" was the feature of the Brockton (Mass.) fair last Wednesday, and a conservative estimate placed the number of cars in the inclosure at three hundred. For having come the longest distance R. P. Hazzard, of Hallowell, Me., was awarded the silver loving cup, while T. G. Cunningham, of Springfield, Mass., won the cup for the best decorated car.

Great Britain has two automobilists who probably hold the age record. Their car will run a good race, in point of antiquity, with any other motor vehicle still in active service. The couple are Mr. and Mrs. Wood, of Herts, whose combined age is 163 years. Mrs. Wood is eighty-two, while her husband is younger by a single year. Their car is a 3½ horsepower Benz, which was built in the last century, 1898.

The pioneer Haynes car of 1893 is to find a last and honored resting place in the National Museum at Washington, D. C. The authorities recently made application to the Haynes Automobile Co., Kokomo, Ind., asking that Elwood Haynes's first horseless carriage be given a permanent home in the museum. The machine was unfortunately in a freight wreck when returning from the Boston show and some of the parts need replacing. As soon as this is done it will be shipped to Washington.

As the nights grow colder the automobile driver will do well to remember the oft told injunction to squirt a few drops of kerosene into the cylinders of his machine whenever he brings it in from the road, and to give the crank a few turns. It will free the walls from any accumulation of heavy oil, which under the influence of the cold tends to congeal, and render starting more difficult when the motor has had time to cool, and also tends to clog the packing rings in their grooves and render them liable to breakage.

The solitudes of Mount St. Bernard, where dwell the celebrated monks and their no less celebrated dogs, are being invaded by the rhythmic throb of the motor truck. A machine of this description, capable of dealing with a load of five tons, is being introduced for the purpose of transporting supplies from Martigny up to the famous hospice. The first climb of the truck was made recently. It presented a somewhat entertaining appearance, for, with a view to convincing the horses of the district that the machine was harmless, a representative of Dobbin communis was harnessed in front of it, forming a sort of animal figurehead. The tremendous climb was successfully accomplished in a single day.

Gasolene is a substance that is not to be treated lightly wherever it may happen to be found, as witness the experience of some young Englishmen in a boat recently. Some automobilists that were about to embark on the boat from New Haven to Dieppe emptied the contents of the tanks of their cars promiscuously, most of the fuel finding its way into the river, where it floated off down stream. One of the aforesaid young men out of curiosity lighted a match and threw it on the surface to see if the gasolene would burn. Instantly a fierce flame is said to have shot into the air, setting fire to the boat and the man's clothes. He immediately jumped overboard to extinguish the flames, and was severely burned before being rescued. His companions escaped without injury.

The old "Cannon Ball" road, or at least that part of it running through the property of Howard P. Frothingham, at Wanaque, N. J., is no more. That was settled at a hearing held last Saturday afternoon at Pompton by the commission named recently by the court to examine into the road and its condition, in accordance with a petition asking for the abandonment of the road. The famous old road began near Hilltown, N. Y., where there was at one time an old forge. Here the Tories made cannon and shipped them by team to Lord Howe's army during Revolutionary times. Although practically impassable for years, the historic highway has been an objective point for automobile tourists.

The Tale of the Tailor.

Not even the most imaginative of press agents was keen enough to discover "automobile chest" as another and most convincing argument why the public should buy the particular car he was paid to dream about, but the new recommendation belongs equally to all kinds of cars except those that do not go, so probably there may be some bright mixer of automobile stories and advertising that knew of this all along, but did not think it worth while.

The story came out in this way: While in the throes of being measured for a suit of clothes the tailor suggests to his customer:

"Been taking a lot of exercise, Mr. Blank?"

"Why, no," replies the customer. "What makes you think so?"

"Because your chest is fully two inches larger round than it was last year," remarks the tailor, again asking if he had not changed his habits in some way or other.

Again the reply was in the negative, but the customer admits to having done considerable automobiling, adding: "But there's no exercise in that, and particularly nothing to expand the chest."

Then the tailor speaks his little piece and announces the discovery up to which he has been leading.

"Automobiling," he declares, "is exercise and its effects are particularly noticeable in increasing chest measurements. I've seen it in a number of my customers, who don't indulge in athletics as ordinarily understood, but who do a great deal of automobiling. And it isn't the steering either, for the increase of chest comes whether they act as their own chauffeurs or sit on the back seat and do nothing. Apparently it's the effort required to breathe rapidly moving air, and the purity of the air may have something to do with it."

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TOURING TRIALS TOO COMPLEX?

That Belief "Gives Pause" to French "Sportsmen"—Odd Origin of Bennett Cup Story.

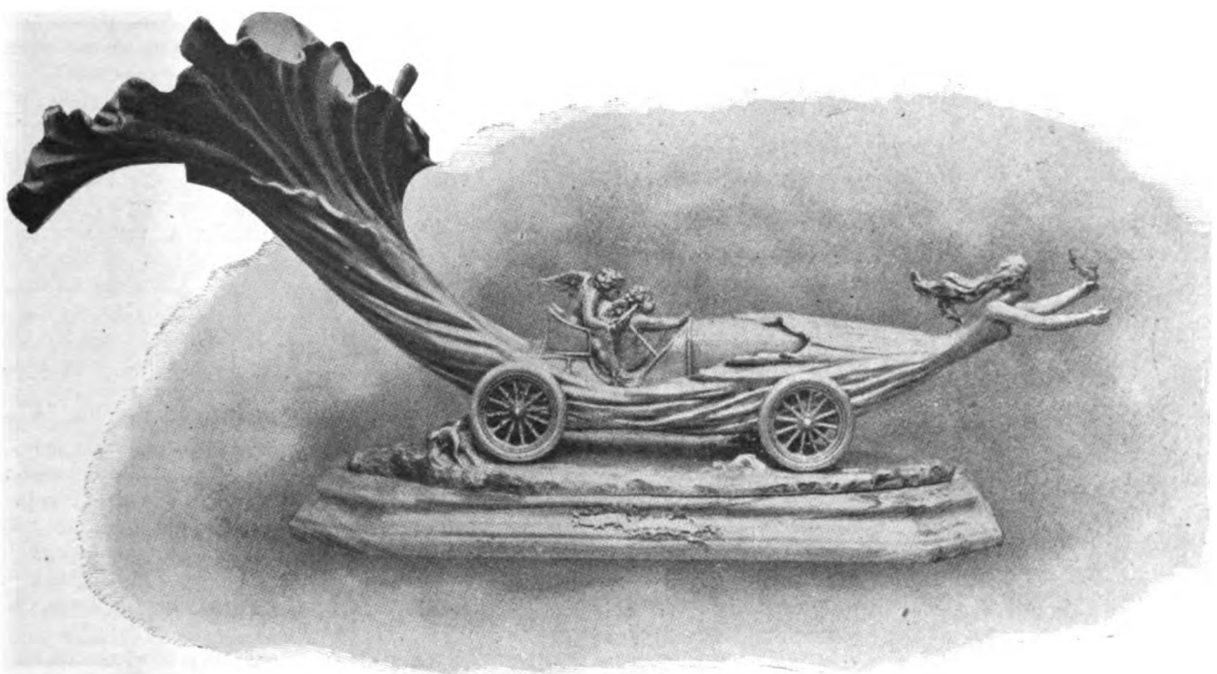
Paris, Sept. 26.—After the disappointing results of racing this season, when the existence of the sport seemed to be threatened by the abstention of makers and the strange attitude of the French Automobile Club, there was every reason for concluding that long distance racing had had its day. The French manufacturer would not look upon racing as a sport, but simply as a costly advertisement, and so long as these big events were regarded as a criterion of international supremacy in the motor car industry he refused to take part in them, unless the different countries were represented in proportion to the extent of their respective industries—that is to say, France was to have a much larger number of cars running than her foreign competitors.

There was, of course, not the slightest hope that other countries would fall in with these singular views. They could not be expected to support races in which the numerical odds would be enormously in favor of the French. Under these circumstances the French Club withdrew into its shell and waited to see how things would develop. As they expected, the Bennett Cup event petered out when other countries found that there would be no honor, and perhaps little profit, in competing for a trophy from which the leading competitor held aloof, and perhaps also these countries had little desire to take upon themselves the heavy financial burden of organizing such a race. The French club made a pretence of dissociating itself from races in any shape or form, and began to work out the proposal for holding a vast trial of touring cars which is to constitute the principal event for 1906. For the moment, we heard of nothing but touring trials, which seemed to have already taken a definite and all important standing with the Pyrenées Cup, the Herkomer Cup, the Tourist Trophy in the Isle of Man and the Glidden Cup. The motor car industry was to develop in future with the aid of touring trials carried out upon such lines as to interest the mass of the public, and, by showing what practical types of vehicles could do, bring in plenty of orders to makers of the successful cars.

This vogue of touring trials has been carried so far that the trade is now pausing to consider whether they are, after all, the best means of improving the car and awakening an interest in the automobile for the benefit of the motor car industry generally. Touring trials are not objected to in principle, but with their positive minds the French like simple, clear and definite results, without any of the complication usually adopted in tests of touring vehicles. They do not approve of trials in which dozens of factors are worked out to a mathematical formula, because, with such a machine as the automobile, they do not think that any juggling with figures will give convincing and satisfactory results. The factors of speed, price, consumption, efficiency, comfort and the rest of it are often so much at variance with each other that it is very difficult, if not impossible, to work out a formula that will result in the best car winning—that is to say, the car that is the best suited for all classes of automobilists. This difficulty was observable in the Pyrenées Cup trials, and in the Tourist Trophy competition in the Isle of Man the cars competing were mere apologies for touring vehicles, scarcely one of them being presented as it would be if sold to customers. The French fear that with these complicated formulæ the way will be laid open for all sorts of trickery, when the trials will be worse than useless.

As touring trials have certainly come to stay, it is proposed to find a way out of the difficulty by organizing a reliability test to be based upon points in the usual way, and then running the successful cars in a purely speed and consumption test similar to the Tourist Trophy competition in the Isle of Man. The reliability test would simply be a qualifying competition to insure that the vehicles are of a really practical touring type, and the final results would be based mainly on speed and economy. This, however, is only one of the numerous suggestions that will have to be thoroughly threshed out during the next three months so that the club will be able to settle upon a form of touring competition that will give satisfaction to all concerned.

It is fairly certain that touring trials will constitute one of the principal features of next year's programme. But it is too early yet to say whether racing will be altogether abandoned. The difficulties referred to with touring trials have led several firms to come round to a more favorable opinion of racing as being the only clear and positive way of testing the qualities of vehicles, and if it be found that manufacturers would like to see racing resumed the club will be obliged to do something on these lines, in the way, it may be, of a Grand Prix, about which so much was said at the beginning of the year. Although nothing can be said definitely until the club terminates its programme, it is, nevertheless, possible that we shall be having one big race and a big European demon-



THE FLORIO TROPHY.

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stration of touring cars, as well as a number of touring trials organized by different provincial clubs. The hill climbing tests will, of course, continue as heretofore.

In Italy also the outlook is a little more encouraging, and the sport is not likely to be suppressed in the way that was threatened by the recent manifesto of the president of the Automobile Club of Milan, who said that henceforth races were to be replaced by touring trials. A good deal of prominence was at first given to this manifesto, because it was thought that it voiced the opinions of the club generally, but it seems now that the president of the club is only representing a small group who are trying to make political capital out of this question of racing. The majority of the members strongly object to the way in which the club has been drawn into the discussion, while the Automobile Club of Italy has officially announced that it has nothing to do with the manifesto of the president of the Milan club, nor is it disposed to take any stand one way or another. The national club will do what is best for the interests of the industry, and it will certainly authorize the holding of the Brescia race next year, for which Chevalier Florio will offer a prize of $60,000, as well as the big touring trial if the Milan club deems it advisable to carry it out. A similar prize has been promised for the touring trial, and the Milan club is said to be doing things on a big scale so as to cut out the Florio Cup, though for what reason it is difficult to say. Obviously there is a good deal of jealousy and political influence at work on the other side of the Alps.

The president of the Milan club has made himself something of a laughing stock by the way in which he hastened to inform the world that Mr. James Gordon Bennett had handed over his trophy to be competed for in the touring trial. Mr. Bennett was dining at his hotel when he was informed that a deputation of the Automobile Club of Milan was waiting to see him. On asking what they wanted, he was told that the deputation wished to ask him if he would allow his cup to be put up for their touring competition. He replied: "They can do what they like with it; it doesn't belong to me." They took the first part of the answer as a consent, and thus for some days it was understood that the Bennett Cup would be competed for by touring cars in Italy.

Although the president of the Milan club may feel himself very disappointed, it does not follow that the Bennett Cup will not have a new destination. There is an influential section in the French club, with the Marquis De Dion at its head, who would like to see the cup devoted to a big endurance test of touring cars, and this question will certainly be discussed at the conference to be held in Paris during December, when we shall doubtless be fixed upon the various questions affecting the future of the sport.

This conference will divert a good deal of attention to Paris during the show, as also will the congress on international touring, which it is hoped will do a good deal in the way of facilitating the travels of motorists, as well as in securing a uniformity in regulations and in other ways looking after the requirements of motor car owners. So far as France is concerned, there is a threat of much more stringent regulations as the result of the fatal accident which recently happened to a high government official whose cab came into collision with a motor car. Had it been Mr. Jones or Mr. Smith no notice would have been taken of it, but the death of a big official is a handy peg upon which to hang an anti-motoring crusade by those members of Parliament who can find no other means of making themselves heard.

Fortunately, those who are responsible for the regulations are too level headed to do anything that may interfere with such a flourishing industry as the manufacture of motor cars, and the Prefect of Police in Paris therefore simply proposes to enforce some of the regulations with more stringency, especially in the granting of driving certificates. It is argued that there is something absurd in allowing any man to drive a high powered car simply because he is able to show an inspector that he can steer and brake and reverse and knows the rules of the road. Therefore, a man who aspires to the honor of driving a powerful car will have to pass through a very severe examination to prove his aptitude, at the same time that an inquiry will be made into his antecedents to see if he is a person capable of being intrusted with a car, and he will also have to undergo a medical examination to prove his physical fitness. If this be done, the ranks of drivers who show off on powerful cars will be considerably thinned.

To Tour into Turkey.

By express permission of his Sultanic majesty the automobile will shortly invade the realm of the Turk. R. L. Jefferson, an Englishman, recently started in an 8 horsepower single cylinder Rover car on a journey across Europe to Constantinople. The only feature in which the engine differs from others of its type is in being fitted with an inlet valve lifter, which permits of its being used as a brake in running downhill. Owing to the nature of the country to be traversed the entire tonneau has been transformed into a multum in parvo of supplies and replacement parts.

Buy 'Buses to Meet Strikes.

Automobiles have been found so serviceable in times of strikes that the Amalgamated Association of Street and Electric Railway Employes voted in convention yesterday that the executive board be authorized to invest $20,000 in automobile buses, to be held as the property of the union.

During a recent strike of streetcar men at Saginaw, Mich., the association bought three automobile buses and shipped them to Saginaw, where the strikers put them in operation to accommodate the public while the streetcars were tied up. They were shipped to Detroit, where they are in reach of any local union that has a strike and wishes to operate the machines in opposition to streetcar companies employing non-union men.

New Jersey Clubs Nominate Scarritt.

The nominating committee of the recently organized Associated Automobile Clubs of New Jersey has made up the following ticket, which will be voted upon at a special meeting this week: For first vice-president, Winthrop E. Scarritt, of East Orange, a member of the Automobile Club of New Jersey; second vice-president, George A. Post, of Paterson, representing the North Jersey Automobile Club; secretary, W. F. Sadler, Jr., of Trenton, of the Mercer County Automobile Club; treasurer, Frank M. Eveland, of Jersey City, of the Hudson County Automobile Club. The nominations for trustees are W. B. Hunter, of East Orange, Automobile Club of New Jersey; W. J. Morgan and J. H. Wood, Newark, New Jersey Automobile and Motor Club; W. G. Norwood, Paterson, North Jersey Automobile Club; J. H. Edwards, Jersey City, Hudson County Automobile Club; Walter E. Edge, Atlantic City, Atlantic City Automobile Club; F. G. Roebling, Trenton, Mercer County Automobile Club; W. N. G. Clark, Asbury Park, Monmouth Automobile Club, and Senator Lewis M. Cresse, Cape May, Cape May Automobile Club.

How He Fooled the Farmer.

According to a tale that comes from the Badger State, a Racine motorist neatly punished a granger for his ill will. The road was narrow, and the farmer refused to let the chauffeur pass, the farmer walking his horses for several miles. Finally the car got by, but stopped short in front of the farmer and his team.

"Get out of the way and let me pass!" yelled the granger.

"Sorry I can't oblige you," replied the chauffeur, "but the machine has broken down."

After fuming and swearing for half an hour the farmer volunteered to help push the car out of the way. He pushed and perspired, grunted and swore, but could not budge the machine an inch. When the driver considered the farmer well punished he released the brake and was soon out of sight up the road.

Massachusetts Has a Nut to Crack.

Though the selectmen have closed certain streets in South Framingham, Mass., and their ruling has been upheld by the Massachusetts State Highway Commission, there is one man who has yet not been molested. He is W. R. Hurlbutt, a rural free delivery carrier, who uses an automobile to deliver the mail. The local authorities are now claiming that Hurlbutt also should be prohibited from using the forbidden streets, but as he questions their authority to stop a carrier employed by Uncle Sam, they hesitate to stop him. In the mean time, while waiting for an opinion from a higher source, Hurlbutt is still delivering the mail by automobile.

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LEAKS IN COOLING SYSTEM

Some of the Things that Cause Them and How Repairs May be Effected

One of the weak points in the water cooling system for gasolene motors is the danger of leakage and the difficulty of locating and repairing such faults. The impossibility of preventing a certain amount of working of the parts when the machine is on the road is largely responsible for this, and it is a flaw which is not easily to be eradicated. To get rid of the difficulties which arise from this source it is customary to use flexible connections between the radiator and the motor and between the motor and the tank, where that is not incorporated in the former. These, being commonly of ordinary rubber tubing, are a source of frequent trouble from their own tendency to rot under the action of oils and grease which are continually flying about when the motor is in action.

When it becomes necessary to break such a joint for any reason, it is found to be almost impossible to make it tight again without putting considerable tension on the grips which hold it in place, and even after taking the greatest pains to secure a perfect union there will often be a slight leak for a time until the rubber has settled into shape. After rubber has been in service for a time it becomes hard and stiff and loses its flexibility to a certain extent, thus failing of its purpose, and the result is that the piping is racked at every turn of the motor almost as much as it would be were there no provision made to avoid the effect.

A very good substitute for the simple rubber, which happily is finding its way into more and more common use, is the flexible metallic tubing, which has the advantage of making a perfect union possible as well as being water tight and strong at all times. It cannot readily be substituted for the plain tubing on a machine, since it requires flanged connections, but even although rather expensive in point of the cost of installation, it frequently pays well to effect the change and set it up on a car which has not been equipped with it in the first place.

Aside from the leakages which occur from the straining of the joints due to the imperfect action of the flexible joints, a rather common source of trouble is from stones which are thrown up from the wheels on the road. Accidents from this source, however, cannot be forestalled, and must be treated as occasion demands. Frequently the radiator suffers considerably from this cause, a very considerable leak being caused by a small pebble cast up on a turn.

The location of small leaks is very difficult, especially when they are so small that they only permit a slight seepage of water which flows along the outside of the pipe or radiator to its lowest point where it forms in drops. A very good method of detecting such leaks is to fill the system with low pressure steam, first having drained off all the water and plugged up the overflow, the faulty points then being readily distinguished by a tiny jet of escaping vapor. To apply this test it is only necessary to make a temporary connection with a steam radiator or with a pipe fitted with a reducing valve. Another method which is sometimes recommended is to blow smoke through the system, the result being the same.

The repair of small leaks depends, of course, upon the location and nature of the trouble. A leaky joint comes often enough from a bent or cracked flange in some coupling, and is only to be permanently repaired by reflanging the faulty part. Piping which is cracked may be repaired by brazing or by soldering with a blow torch, and, of course, leaks in the radiator are to be repaired by soldering, but the work is ticklish, owing to the nature of the structure, and should not be undertaken by one who is not expert in the use of the torch and the soldering iron.

It is generally possible to repair small leaks on the road by means of tire tape, in connection with that nauseous plastic substance chewing gum, but it is not wise to depend too strongly upon a repair so made as it is not trustworthy. It is far better to insert a handful of bran or even common sawdust into the filling tube, whence it will seek out the leak and plug it with astonishing rapidity, and form a solid repair which will last for weeks and even for a whole season under some conditions.

It is well to flush out the cooling system once in every three or four hundred miles on the road, thus ridding it of any accumulated silt, and at the time it is being done it is well to look over the connections to see that they are not leaking and that the pump is in order. On a well arranged car it is a comparatively simple matter to keep the cooling system in perfect order, repairing small leaks as fast as they develop and taking care to do a permanent job in every case. Unless this is done, however, there is every likelihood that trouble will come when least expected, and that it wil be of a serious nature, for when the piping is partially stopped up with sediment and the joints are not perfectly tight, even a slight amount of damage may seriously interfere with its work.

It is probably needless to suggest, too, that after a season's running, and before the machine is prepared for the winter, it is essential that all leaks be gotten rid of so that there shall be no loss of the precious antifreezing solution which is to be put into it later on, and probably, too, at a time when to lay up the machine for a day or so to go over it would be a serious loss of the glorious riding weather of the late fall.

A brilliant Englishman has devised a system of mirrors, by means of which the driver of a car has a beam of light reflected into his eye from the tail light at all times, thereby enabling him to make certain that the flame has not been snuffed out. Incidentally, the beam is made to cover the section over which the gear shifting lever works, thus enabling him to see clearly in what position the gears are placed before making a change.

ABOUT THE MOTOR OMNIBUS

What it Costs to Operate it and Wherein it Surpasses the Street Car.

As a result of the intense rivalry which has been engendered in England over the adoption of the motor 'bus in localities which up to the present time have been monopolized by the electric tram lines, a considerable controversy has arisen over the respective costs of operation of the two modes of transportation, and a battle of statistics is in progress. United States Consul Mahin, of Nottingham, in a recent report to Washington, takes up the matter for a second time, and corrects certain assumptions which he had formerly made, in consequence of a storm of protest which the first text had created, at the same time admitting that he had drawn his conclusions from the somewhat unsatisfactory basis of newspaper statements.

The costs of operating vehicles of the two classes, which had been given as 24 cents per ton mile in the case of the trams and 80 cents per tone mile in the case of the motor 'buses, are recognized as being totally incomparable, because of the difference in the seating capacity of the two, the tram cars carrying from fifty to seventy passengers, and the 'buses taking from twelve to thirty-six, and even forty in the very latest types.

Comparing the analagous costs of tire upkeep and maintenance of way in the two cases, he gives the former as something like 16.10 cents per mile, including all contingent expenses, while the latter amounts to 14.56 cents per mile, or a trifle less. The difference in cost should, however, decrease, as time goes on, as "improvements, organization and increased knowledge" are reducing the factors which now create the chief points of divergence.

Discussing the general advantages of the motor omnibus as compared with the tram line, he says:

"If every pertinent consideration is given fair weight, it is but little more expensive to operate at the present moment than the tram car, and its comparative newness leaves room for improvements which will sensibly reduce its working expense. It is practically unassailable in congested city streets. In towns having a population of below 150,000 the motor omnibus can, generally speaking, be operated more profitably than a tramway, because the size of the population will not warrant the running of a sufficient number of tram car miles per mile of track to yield a return on the heavy capital investment. It can change its route at will to accommodate passing demands. It serves as traction for perishable market supplies. It fills gaps on rural routes or it extends facilities similar to those of steam railways. In these various respects the motor omnibus is unique."

C. L. Scrivens, the Ashtabula (Ohio) dealer, has leased the old armory building in that city and will convert it into a garage. Scrivens expects to move from his present Main street location before January 1.

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1,000 Miles Without a Single Adjustment

won the Glidden Trophy for the

PIERCE

There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads—the Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

THE GEORGE N. PIERCE COMPANY,
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SURFACE CARBURETTERS AGAIN?

Advent of Mechanical Valves Suggests They Were Discarded Without Sufficient Trial.

During the trials of carburetters, held in the early part of the year by the Automobile Club of France, many experiments were made which point to the fact that some foreign engineers do not seem to be satisfied with the modern spray carburetter, even when fitted with automatic devices for controlling the mixture and making it of uniform strength, however much the engine speed may vary.

According to M. Lumet, the engineer in charge of the laboratory of the Automobile Club of France: "In order to obtain a homogeneous carburetted mixture, long lengths of induction pipe have been used in connection with wick carburetters, but it is found that the friction of the mixture in passing along the pipe causes the motor to lose power. Experiments showed that a 10 horsepower motor lost 10 per cent in power when a heated pipe four inches in length was added to an induction pipe already of a fair length.

"The old type of carburetter was of the wick variety. This was superseded by the float feed jet type, where a spray of gasolene is sucked up and carried into the cylinder in the form of vapor.

"The partial vacuum caused by the suction of the piston causes a spray of gasolene to rise from the jet. The more violent the suction the larger is the volume of the spray induced. For this reason a motor turning quickly induces a spray or jet of large volume and the mixture delivered to it is consequently much richer in gasolene than when the motor turns slowly. There is, therefore, no constancy in the mixture, as the motor is always varying in speed. In order to obtain the best results in a motor the contrary should obtain, and the slower the speed the richer should the mixture be in order to make up by richness for the lack of compression.

"With the introduction of mechanically operated inlet valves comes the necessity of providing a constant mixture, and constructors are already returning to the old type of wick carburetters, which expose to the inrushing air a surface saturated with liquid gasolene in place of the jet."

One of the few firms abroad that have remained steadfast to the surface carburetter, after all other builders had discarded it in favor of the float feed automatic type, are the constructors of the Delahaye cars, and now that, as in the case of the low tension magneto, some engineers have come to the conclusion that the surface carburetter was dropped without sufficient trial, a description of this will be of interest.

It consists of a chamber or receptacle for the fuel, and is, of course, considerably more bulky in all its parts than the float feed type, this being considered one of the great advantages of the latter. Warm air is led from a space in the cylinder jacket through a pipe terminating below the gasolene level in this receptable, the latter end of it being pierced with a number of holes. Surrounding the intake pipe is a funnel shaped device and a number of baffle plates to prevent the liquid from splashing about. The entire upper part of the chamber constitutes a reservoir for the storage of the explosive mixture, from which it is drawn into the cylinder.

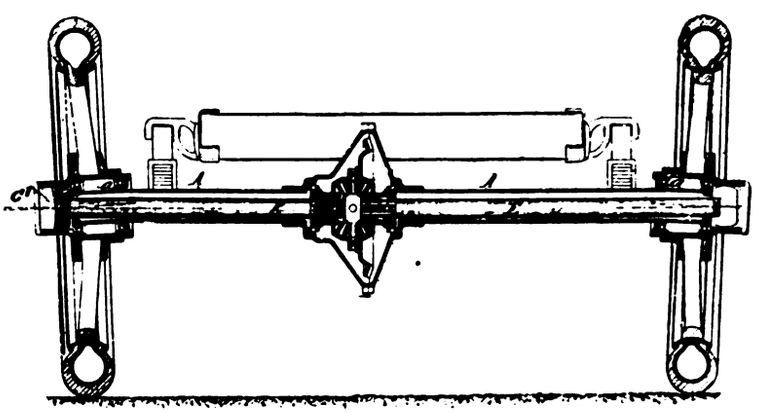
This type of carburetter was used steadily for several years on the Delahaye two cylinder cars, but when its adoption for four cylinder motors was attempted it was found that its size would be prohibitive, in addition to which it is not so well adapted to the needs of the multiple cylinder motor, as the latter requires a constant stream of fuel,

Axle that Permits of Staggered Wheels.

Despite the existence of the thousand and one more or less complicated devices for preventing a car skidding on the road, some of which are on the market and more are not, nothing has been found so effective as giving the wheels a bit of stagger—that is, setting their axes so that they run slightly out of the perpendicular, with the inclination inward. This permits the tire to grip the road when the car tends to slide sidewise from whatever cause, and has been proved to constitute a better preventive than anything yet devised.

No difficulty presents itself in the application of this form in mounting the front wheels, but in the case of live axle drive it is a different matter with the rear wheels. In many it is impossible to obtain this flare because the two parts of the real live axle which extend from each side of the differential are journalled or provided with bearings in the cylindrical casing, which is fast to the gear box and rigidly sprung. This construction renders impossible the obtaining of even a slight amount of flare or stagger, inasmuch as the wheel is fixed to the journalled axle and can only be at right angles thereto.

A form of rear axle construction designed to overcome this and permit of the rear wheel being given the same or almost as much stagger as the front ones has been devised. It is illustrated sectionally in the accompanying line drawing. A represents the customary tube, or casing, which constitutes the support and container for the moving axle. This is formed of two pieces, terminating in the differential casing, and carries at its outer extremities the parts aa, slightly inclined relatively to A, in such a manner that the axes, Y, of these blocks make a slight angle with the axis of the live axle itself. Upon these inclined extremities are mounted the road wheels, running on ball or roller bearings in the usual manner. The two portions of the live axle, EE, are slightly longer than the tube A, and extend beyond it without making contact at any point and without the use of bearing rings. The ends of the live axle are connected to the road wheels by means of a Cardan joint or similar articulated device that permits of the angular connection. In the drawing the connection consists of the spherical segment F centred in the cap C and having upon its bases two slots, or notches, at right angles to one another. With one of the latter there engages



the T shaped head or end of the axle, and with the other there engages a web belonging to the cap of the wheel hub.

What the Backwoodsman Wanted.

A prominent automobile manufacturer is alleged to have received the following communication from a Canadian backwoodsman who wanted to open an agency:

"I vont fayndant bat dis passinger Coach and bat touring Car I gon bay von ovdis kayn i layk dem val befor nekst spring i vond von anuvey, and nadr man her vond von cip con chip az keu seld or some sekind hend.

"ve vond picen avdovet and prais-list."

Which is supposed to mean:

"I want to find out about passenger coaches and touring cars. I am going to buy one of this kind. I like them well, before next spring; I want one anyway, and another man here wants one cheap, as cheap as can be sold, or second-hand. We want pictures and price-list."

It is said that a blacksmith in Winnipeg Canada, has discovered a process of welding copper which is as successful as it is simple and inexpensive. The report states that by this process copper may be welded to copper or to any other metal without injuring its electrical conductivity or in any way impairing its other properties. It is a great pity that Winnipeg is so far away.

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Parts for 1906 Automobiles:

For the convenience and assistance of automobile builders we have prepared complete drawings of our 1906 model pressed steel frames and frame members, and other parts, which will be mailed upon application. We are prepared to build pressed steel frames, change gears, front and rear axles and other parts in any quantity for early delivery.

STEEL STAMPINGS:

We make a specialty of steel stampings of all descriptions, including hubs, parts, brake drums, etc.

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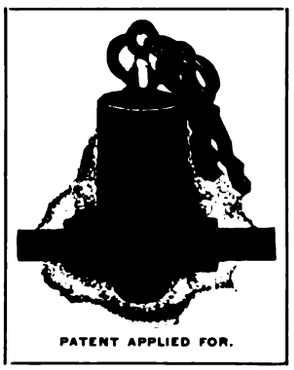
Another specialty of ours—we make the best steering wheel rim on the market, and a large variety of spiders for application to any steering column.

Send for our Steering Wheel circular

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No More Borrowing Cars Without Owner's Permission



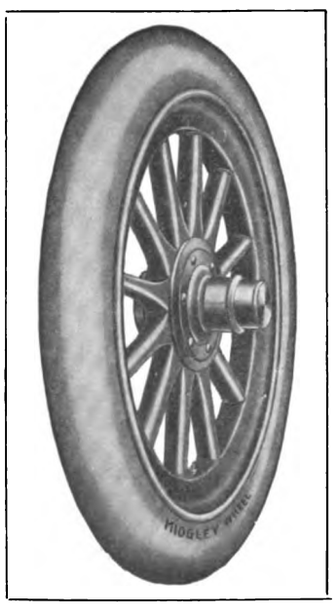
The Hill Lock Valve

(here shown), is a new device and a good one. It is connected at any convenient place in the gasolene pipe and when locked and the key withdrawn prevents the gasolene from flowing to the carburettor and consequently the engine cannot be started. The key cannot be taken from the lock until the gasolene supply is entirely shut off—when shut off keep the key in your pocket. Impossible for anyone to steal your car. Your fuel supply is **locked,** but your car can be pushed to the wash-stand for cleaning, or into the street in case of fire. It is a small device made entirely of brass and turned with a "special key"—no two keys are alike. The lock is of the finest grade, it has five tumblers and cannot be picked or opened without the "right" key. Three keys are furnished with each lock. The locks are perfectly tight, being tested by gasolene under a pressure of one hundred pounds. It is made for all sizes of pipe from the smallest motor-cycle or launch to the most powerful touring car. Price, $5.00. **Special price to Supply Houses and Automobile Manufacturers.** Apply to your supplyman or garage. If not found in stock, address

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THE STRONGEST AUTOMOBILE WHEEL MADE.



THE ONLY WHEEL that will always remain absolutely true.

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THE MIDGLEY MFG. CO., Columbus, Ohio

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should *not* buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the *two* cycle two cylinder Elmore engine.

Understand—the *two* cycle two cylinder Elmore engine produces *two impulses every time the fly-wheel turns.*

As you know, the two cylinder *four* cycle furnishes only *one* impulse every *fourth* time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

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New Idea in Spring Damping.

An English inventor has approached the spring damping problem from a new standpoint in contriving an arrangement by means of which the suspension is divided between two sets of springs, the one carrying the load ordinarily and the other opposing the upward motion of the body on the rebound following a shock. The arrangement is that of two axles, one carrying the wheels, and having the main springs mounted upon it, and the other being supplied with a set of supplementary springs, so constructed that they do not synchronize with the first. Besides these, there is a set of secondary springs mounted in such a manner as to counteract the tendency to upward motion. The effect of the combination is to neutralize all shocks, the vibrations of the different springs being absorbed in one another in such a way as to have but little effect upon the occupants of the machine.

Using the Teeth to Locate Knocks.

When it is desired to locate a knock in the mechanism which is not readily distinguishable to the ear, it is frequently advisable to use a sounding rod, a piece of stiff wire, as, for instance, a bicycle spoke serving to best advantage, one end of it being pressed against some accessible stationary part and the other held between the teeth, the ears being stopped up with the fingers at the same time. In this way the vibrations which take place within are communicated to the rod, and through it to the teeth and the ear drums, while all external sounds which tend to confuse the listener are excluded. By this method it is often possible to locate with absolute precision a loose part the sound of which otherwise so blends with the other noises of the machine that it is only significant that something is amiss, but is capable of no further interpretation.

Concerning Cars that Smoke.

A great hue and cry is being raised in England and on the Continent over the prevailing tendency of gasolene motors to emit considerable volumes of thick noxious smoke. In this country the trouble is less noticeable because of the fact that many of the cars in use will not run well under conditions of excessive lubrication, but it is a fact that the number of smoky cars seen on the streets is daily increasing. In many such cases the smoke is quite inexcusable, the action of the motor being fully as good with a less amount of oil than when the cylinders are flooded. In others, where the best results are obtained by flooding the mechanism, it is to be expected, but it is by no means necessary.

The excuse often given that the method of throttle control, by increasing the vacuum in the cylinder sucks the oil up by the piston, seems hardly rational, as the joint between the cylinders and pistons is so tight that there is little or no opportunity for the lubricant to actually flow through it, that which actually reaches the combustion chamber being in the form of a film on the walls, which is partially scraped off by the rings on the downward stroke. This amount is not at all likely to be affected in any way by the method of control.

The Grafter in New Guise.

Chicago has a new kind of grafter, says the Inter Ocean, and advises garage keepers to "look out for the man representing himself as proprietor of a country hotel who is apparently anxious to purchase an automobile. He is out to see the city at the expense of the agent under the guise of being a prospective customer. Last week this individual visited the Hayden Automobile Co., and, after talking figures and looking over specifications with Thomas Hay, the local agent, stated that he would like to have a demonstration. Mr. Hay drove him out to Washington Park, explaining the mechanism en route and also showing him how to operate the machine.

" 'This car is perfectly satisfactory,' stated the prospective buyer. 'It will fully answer the purpose for which I wish to buy it. I shall use it to take my guests to and from the railroad station to the hotel, and will also rent it for pleasure purposes. If you will take a pencil I will dictate a telegram to my brother.'

"The telegram instructed the alleged brother to send the amount necessary to cover the cost of the car. It was sent collect and returned, as the brother proved to be a myth. Mr. Hay is now looking for the man, although he is thankful that he did not take his gold watch or diamond scarfpin."

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau Street, New York.

HEALTH FOR YOU

flows out of the rocks at the various medicinal springs at

FRENCH LICK-WEST BADEN SPRINGS

in the highlands of Southern Indiana. This is the season of the year when a brief visit there will restore the normal balance of your system—renew appetite—put you in condition.

Outdoor and Indoor Recreations in Plenty—Golf Playing Now.

Superb Hotel Accommodations.

MONON ROUTE

CHICAGO, INDIANAPOLIS & LOUISVILLE RAILWAY

Hotel Rates range from $8 to $35 per week, including free use of all the waters.

Booklet telling all about the waters and giving list of Hotels and Boarding Houses, with their rates, sent free.

FRANK H. REED, Gen. Pass. Agt., Chicago.

CHAS. H. ROCKWELL, Traffic Man.

WHY

PREMIER CARS

Appeal to All Classes.

TO THE PROFESSIONAL MAN—Because of its simplicity.

TO THE BUSINESS MAN—Because of its readiness to go at all times.

TO THE REPAIR MAN—Because of its perfect accessibility to working parts.

TO ALL MEN—Because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5000 recorded miles—is only a trifle over one cent per mile for the car—or 1-5th to 1-4 cent per mile per passenger—total for repairs, fuel, etc., excepting tires."

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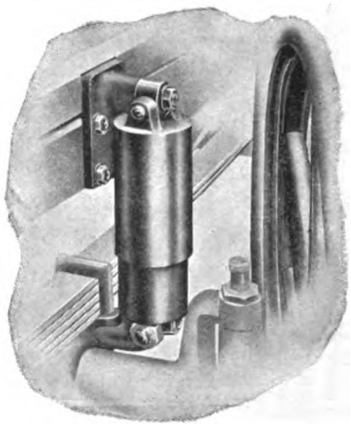
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The Week's Patents.

800,418. Circuit Controller for Explosion Engines. Richard Varley, Englewood, N. J., assignor to The Autocoil Company, a corporation of New Jersey. Filed February 8, 1905. Serial No. 244,719.

Claim.—1. A circuit controller for explosive engines, comprising a circuit closer and a circuit opener, with means for simultaneously shifting both of them so that the instant at which they shall be actuated in the cycle of the engine may be altered, in combination with means for shifting the circuit opener independently of the circuit closer, and simultaneously altering the speed of the engine.

800,497. Fly Wheel and Crank Shaft Structure. Stanley W. Shaw, Galesburg, Kan. Filed March 30, 1904. Serial No. 200,668.

Claim.—1. The combination of alined crank shaft sections, disks carried at the contiguous ends thereof, the disks being concentric to the shaft sections, a wrist pin extending between the disks eccentrically to the crank shaft sections, said shaft sections, disks and wrist pins being integral, and two annular flywheel sections fastened respectively to the peripheral portions of the disks and spaced from each other to permit a connecting rod passing between the flywheel sections.

800,564. Clutch. Linzy E. Gibson, Kokomo, Ind. Filed March 18, 1905. Serial No. 250,848.

Claim.—1. A clutch, including a slidable clutch member, a toggle lever having one end fixed and its other end connected to the slidable clutch member, a controlling slide working in frictional engagement with the toggle lever to move the clutch member forwardly, and a spring operating upon the toggle lever in opposition to the slide.

800,572. Automatic backstop for Motor Cars. William B. Hayden, New York, N. Y. Filed May 31, 1905. Serial No. 263,067.

Claim.—1. An automatic backstop for vehicles, comprising a band having one inner face provided with a plurality of grooves, a stationary support, an eccentrically mounted toggle on said support, provided with a plurality of teeth corresponding to the grooves in said band, a spring connection between the toggle and the support for retaining the toggle against the band, and means for shifting the toggle from its engagement with the band.

800,603. Magnetic Clutch Mechanism. Harry A. Williams, Akron, Ohio, assignor to The Williams Electric Machine Company, Akron, Ohio. Filed February 14, 1905. Serial No. 245,577.

Claim.—1. A shaft, a loose pulley thereon, a driving member rotatable with the shaft, a fixed support for the shaft, a loosely supported rotatable member, means for frictional engagement between said loosely-supported member and pulley, combined with a magnetic clutch, and electrical connections whereby said clutch is energized to actuate the frictional means for driving the pulley.

800,614. Governing Device for Explosive Motors. James R. Hubbard, Chicago, Ill. Filed June 20, 1904. Serial No. 213,248.

Claim.—1. In an explosive motor, in combination with the gas inlet valve, an auxiliary cylinder and piston therein connected with the gas inlet valve, the connections being proportioned for multiplying the movement with the inlet valve, in opening, transmits to the auxiliary piston, said auxiliary cylinder having beyond the piston a restricted air inlet, and a check valve opening outward for free outlet.

800,625. Induction Coil for Igniting Explosion Motors. Jules Carpentier, Paris, France. Filed February 8, 1905. Serial No. 244,757.

Claim.—1. In an induction coil, the combination with the armature of the interrupter of an electromagnet having two windings serving to operate the armature, the one winding being of thick wire and being adapted to have the main current pass through it, while the other winding is of thin wire and has a shunt of the main current passed through it, substantially as and for the purpose described.

800,638. Storage Battery. William Gardiner, Chicago, Ill., assignor, by mesne assignments, of one hundred and fifty-two two-thousandths to Universal Electric Storage Battery Company, Chicago, Ill., a corporation of Delaware. Filed June 11, 1904. Serial No. 212,135.

Claim.—1. A storage battery plate comprising a lead grid having cross pieces each formed with longitudinally extending top and bottom offsets facing in opposite directions, and suitable material to become active held in the recesses formed between the said cross pieces, the top and bottom surfaces of said cross piece extending horizontally from one face of the plate to the other, the said offset surfaces being vertical and at right angles to said horizontal surfaces, said horizontal portions of the grid having comparatively thin and straight unbroken outer edges, whereby the opposite surfaces of the plate, when in use, present a maximum of active surface and a minimum of inactive surface.

800,640. Elastic Tire for Vehicle Wheels. Henri Gilardoni and Henri Le Riche, Paris, France. Filed March 16, 1905. Serial No. 250,459.

Claim.—1. A wheel tire with a warp of textile threads and a weft of elastic elements the ends of which are bent back in order that they may hook into the edges of the wheel rim, in combination with a ring within the tire at the periphery of the wheel to serve as a stop for limiting the flattening of the tire when submitted to undue exterior pressure, the said stop constituting the rim itself, and a counter rim serving in combination with the other rim to retain the hooked edges.

800,647. Carbureter. William A. Hatcher, Cleveland, Ohio, assignor to the Brew-Hatcher Company, Cleveland, Ohio, a corporation of Ohio. Filed February 23, 1905. Serial No. 246,934.

Claim.—1. In a carbureter, the combination, with a passageway for feeding a combustible aeriform mixture into the cylinder of an internal combustion engine, of an air chamber having an air inlet and arranged a suitable distance below the aforesaid passageway; a mixing chamber located between the air chamber and the said passageway and arranged to discharge into the said passageway; means for controlling the discharge of the combustible mixture from the mixing chamber to the said passageway; an oil conducting pipe arranged centrally of the air chamber and discharging into the mixing chamber, which pipe is externally screw-threaded at its lower end and screwed into the bottom of the air chamber; means for supplying oil to the last mentioned passageway; a valve for regulating the discharge of oil from the said pipe, and several suitably supported flap valves normally covering the air chamber and arranged to be swung into the mixing chamber by suction created within the mixing chamber.

800,659. Gas or Gasolene Engine. Ernest H. Korsmeyer, Rosedale, Kans. Filed July 20, 1903. Serial No. 166,274.

Claim.—1. In a motor, the combination with a cylinder and a piston therein, of a casing secured thereto and provided with an open end half journals located at the open end of the casing, a second casing, half journals located on the second casing and adapted to register with the journals at the open end of the first named casing, the last named casing secured to and closing the open end of the first named casing, shafts received in the journals formed by the juncture of the casings, gearings secured upon the shaft within the casings and means connecting the piston and gearings to actuate the former.

800,684. Rotary Hydrocarbon Engine. William E. Schneider, Washington, D. C. Filed October 12, 1903. Serial No. 176,720.

Claim.—1. A motor having a casing, a cylindrical piston mounted to revolve therein and provided with a tangential chamber open at the periphery, means for introducing an explosive charge into said chamber at one point of the revolution of the piston, and means for exploding the charge at another point of said revolution, substantially as set forth.

800,732. Power Transmission Mechanism. Christian Forthun, Oak Dale, Iowa, and Martin Forthun, Leroy, Minn. Filed June 1, 1905. Serial No. 263,303.

Claim.—The combination with a reciprocating rod 1, of a shaft 3, a wide faced ratchet wheel 5 on said shaft, a pair of bifurcated levers 12 pivoted on said shaft 3 and embracing said ratchet wheel, a pair of spring pressed driving pawls 16 pivoted to the outer portion of said levers 12 and engaging the teeth of said ratchet wheel 5, one member of each pair of pawls being longer than the other, and the links 17 pivotally connecting the outer portion of said levers 12 to the said reciprocating rod 1, substantially as described.

800,770. Gas Engine. Alfred Steinbart, Carlstadt, N. J. Filed February 20, 1904. Serial No. 194,514.

Claim.—1. A gas engine constructed with two cylinders having direct end communication at both ends of the cylinders, of a piston in each cylinder, a piston rod on each piston permanently at right angles thereto, a connecting rod connected with each piston rod, a cross head for each piston rod, a main shaft having a crank, with which crank the connecting rod of both piston rods are connected, substantially as set forth.

800,777. Carbureter and Vaporizer for Explosion Engines. Alfred Westmacott, St. Helens, Isle of Wight, England. Filed May 8, 1905. Serial No. 259,351.

Claim.—1. In a carbureter and vaporizer, the combination of a case or chamber, a group of tubes mounted in removable tube plates made tight with said casing, an inlet in the side of the casing between the tube plates adapted to be connected with the exhaust port of a motor, an outlet from the casing between said tube plates, an oil and air freed device beneath the lower tube plate, an outlet from the casing above the upper tube plate adapted to be connected with the induction port of the motor, a corresponding inlet fitted with an inwardly opening spring valve at the opposite side of the casing, an opening in the casing between the tube plates fitted with a shutter and designed for the introduction of the flame of a blow lamp and a platinum plate or shield within said

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opening substantially as herein shown and described and for the purpose stated.

800,784. Cushioned Tire. Edward C. Bailey, Cromwell, Conn. Filed March 23, 1905. Serial No. 251,619.

Claim.—A cushioned tire comprising an inner hoop which is convexed upon its inner surface and flat upon its outer face, the ends of said hoop overlapping and beveled and adapted to slide one over the other, an outer hoop with its outer face convexed and inner face flat, the ends of said outer hoop overlapping each other and fixed together, a series of cushions which are rectangular outlined in section, against which the inner flat faces of said hoops bear, and a covering surrounding the hoops and cushions, as set forth.

800,809. Pneumatic Tire Guard. Thomas H. Lindley, Cedar Rapids, Ia. Filed January 3, 1905. Serial No. 239,514.

Claim.—1. A guard for pneumatic tires, comprising a continuous metal band closely encircling the tire centrally, and keepers recessed outwardly to take said band, and inwardly conforming to the periphery of the tire in cross-section.

800,835. Vehicle Wheel. Frank A. Seiberling, Akron, Ohio. Filed March 9, 1905. Serial No. 249,242.

Claim.—1. In a vehicle wheel, the combination with a rim and a tire holder locking device, of a tire holder adapted to be engaged by said locking device, said tire holder consisting of an endless ring provided with a bearing surface to engage said rim, and with two outwardly inclined beveled bearing surfaces, both of which beveled surfaces conform in inclination to said locking device.

800,843. Controlling Device for Motor Vehicles. Victor E. Chamberlin, Indianapolis, Ind., assignor to Pope Manufacturing Company, Jersey City, N. J., a Corporation of New Jersey. Filed March 17, 1905. Serial No. 250,520.

Claim.—1. In a motor vehicle, the combination of a motor, a controller therefor comprising a plurality of groups of contacts and connections to determine the speed and direction of movement of the motor, a controller handle movable laterally and forward and backward, and a spring bearing upon said handle to retain it in a line for movement in a fore and aft direction and yielding to permit lateral movement, substantially as described.

800,864. Tire Armor. Jehu C. Moore, New York, N. Y. Filed October 28, 1904. Serial No. 230,364.

Claim.—1. A pneumatic tire, comprising an inner tube, a hollow outer tire having a flat, ungrooved tread, a protecting armor consisting of a thin, flat, endless flexible band of resilient metal extending about said tread, and means for securing said band in place, said means consisting of screw fastening devices which extend through the said outer tire to the hollow therein and are disposed along the middle of the width of the tire.

800,915. Mounting for Power Apparatus for Self-Propelled Vehicles. Edward R. Hewitt, New York, N. Y. Filed April 8, 1904. Serial No. 202,275.

Claim.—1. In a self-propelling vehicle, the combination with a main frame supported upon the axles, of a supplemental frame carrying substantially all of the power apparatus and pivoted to the main frame upon an axis approximately coincident with its centre of motion upon the main frame.

800,996. Internal Combustion Engine. Charles S. Drummond, London, England. Filed November 6, 1903. Serial No. 180,011.

Claim.—1. In an explosion engine the combination of a working cylinder and piston, and three compressing chambers with pistons operated by the engine, one of said chambers compressing air for the working cinder, and two being in series for compressing fuel for said cylinder, said three chambers having pistons, two of which have compressing strokes on the working stroke of the working piston.

801,000. Automobile Steering Gear. William Y. Gambee, New York, N. Y. Filed February 4, 1905. Serial No. 244,121.

Claim.—1. In a vehicle steering gear, two armed levers secured to the wheel spindles, a four armed lever pivoted intermediate said spindle levers, a connection between each end of said spindle levers and corresponding ends of two arms of said intermediate lever, and steering gear for turning said intermediate lever connected to the other two arms thereof.

801,044. Carbureter for Hydrocarbon Engines. Charles W. Parsons, Toledo, Ohio. Filed February 4, 1905. Serial No. 244,095.

Claim.—1. In a carbureter, a reservoir for hydrocarbon liquid, an air inlet at one end thereof, a vapor outlet at the other end, a plurality of transverse partitions of absorbent material partially submerged in the liquid in the reservoir, and a curved partition of absorbent material adjacent to the vapor outlet, substantially as described.

801,097. Variable Speed Gear. Charles M.

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manly, Washington, D. C. Filed March 17, 1904. Serial No. 198,616.

Claim.—1. A variable speed gear comprising a driving element, consisting of multiple stationary cylinders, co-operating pistons and a crank acting as a pump, a driven element consisting of multiple stationary cylinders, co-operating pistons and a crank acting as a motor, a fluid connection between the pump and motor, and means for altering the relative capacities of the pump and motor, substantially as described.

801,115. Anti-Slipping Device for Tires. William J. Smith, Canastota, N. Y. Filed May 15, 1905. Serial No. 260,481.

Claim.—1. An anti-slipping device for tires comprising, in combination with a vehicle rim, clips engaging said rim, snap hooks detachably held to the ends of said clips upon opposite sides of the rim, a chain having a zigzag course in contact with the tread of the tire and engaging said snap hooks alternately upon opposite sides of the rim, as set forth.

801,124. Friction Clutch. Fred S. Williams, Rome, N. Y. Filed December 12, 1903. Serial No. 184,960.

Claim.—1. In combination, a shaft, a loose sleeve mounted thereon and provided with screw threads, a clutching member carried by said sleeve, a fixed sleeve carried by the shaft, a flanged disk carried thereby and forming a second clutching member, a spring pressed disk carried by one of the members and movable into engagement with the other in advance of contact of the two members, radially movable nuts carried by said second clutching member, cam-levers engaging at one end with the said nuts, and a longitudinally movable cam-collar mounted on the fixed sleeve and operatively engaging said cam levers.

801,169. Speed Regulator for Explosion Engines. David F. Williams, Granville, N. Y., Assignor to Ruggles Machine Co., Poultney, Vt. Filed March 9, 1904. Serial No. 197,383.

Claim.—1. The combination in an explosion engine, of an exhaust valve, an exhaust valve rod, a guiding means for the crank shaft end of the rod, a crank shaft, a grooved cam carried by the crank shaft, a cam rod, a bracket adjustably secured to the exhaust valve rod and having an opening for the reception of the cam rod, a compression spring for forcing said cam rod against the cam, a balance wheel carried by the crank shaft, a grooved non-revoluble collar carried by the shaft at a point between the cam and balance wheel, brackets carried by the shaft at a point between the cam and balance wheel, brackets carried by the balance wheel, weighted governor arms having one end extending into the groove of the collar, a pair of ears projecting from the side of the collar at a point beyond the groove, a lever pivoted at a point intermediate of its length to the frame of the engine and having one end bifurcated and connected to the ears, said lever serving as a means for preventing rotative movement of the collar and receiving rocking movement from said collar, the opposite end of the lever being disposed in the path of movement of the crank shaft end of the exhaust valve rod, a leaf spring rigidly secured at one end to the engine frame and having its opposite end bearing against the lever, and an adjusting screw extending through a threaded opening in the frame and bearing on said spring to adjust the sensitiveness of the governor.

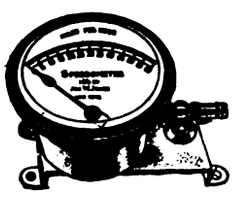
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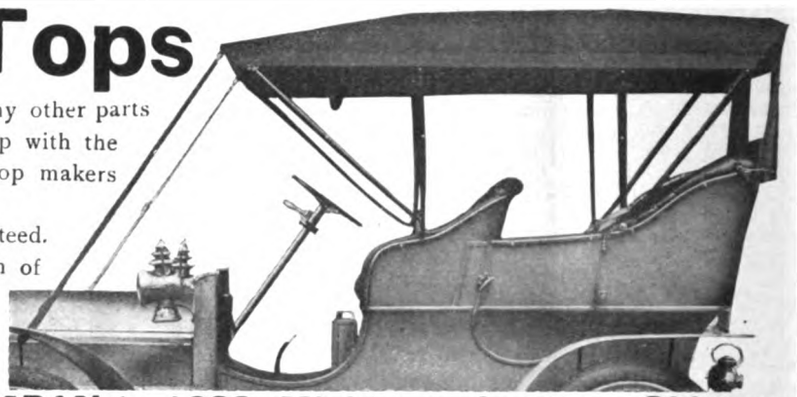
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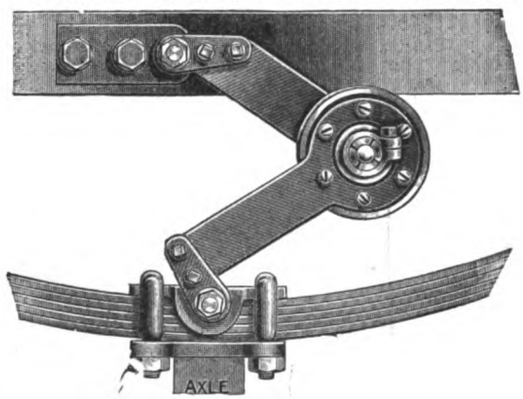
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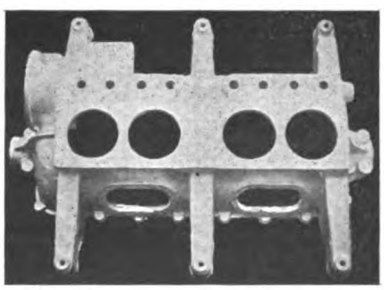
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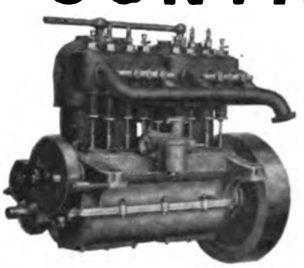
It is safe to assume that the Winton Motor Carriage Company has devoted more time and experimenting to this feature than any other automobile manufacturing company in the country

For more than a year the Hill Precision Oiler has been subjected by Mr. Winton to the most exhaustive tests, both in our experimental department and also in exceedingly severe and prolonged road work. The most satisfactor results have been obtained, and as a result, believing it to be the most perfectly developed lubricating device yet produced. Winton cars will be equipped during the coming season with the Hill Precision Oiler.

Yours very truly,
THE WINTON MOTOR CARRIAGE CO.
CHAS. B. SHANKS, General Sales Manager.

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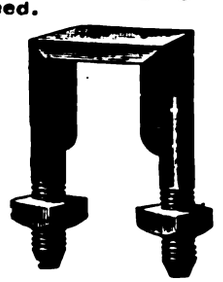
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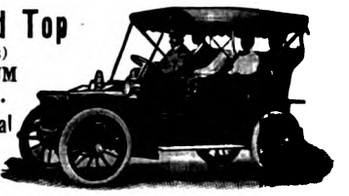
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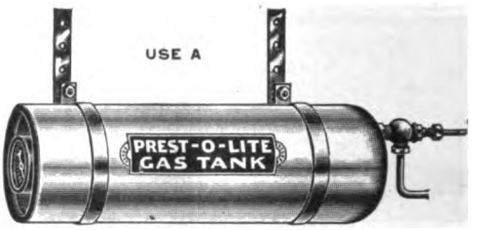
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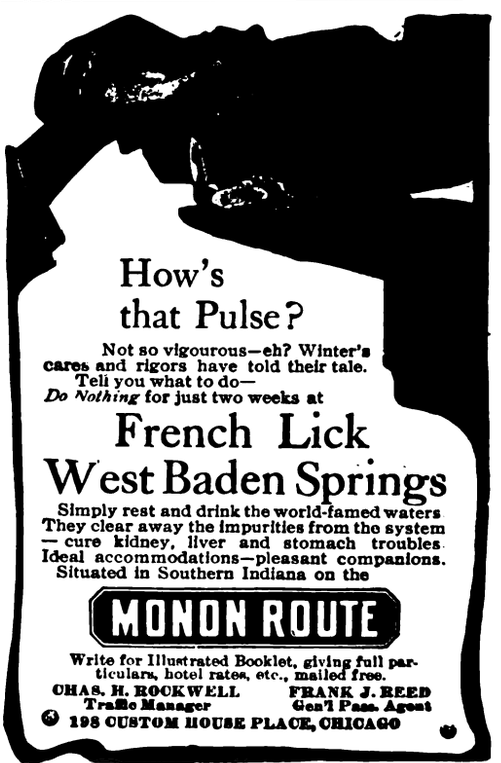
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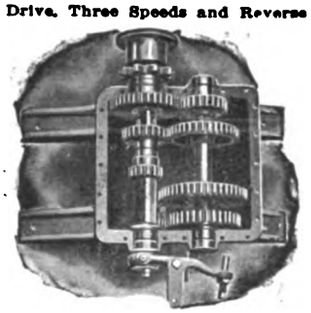
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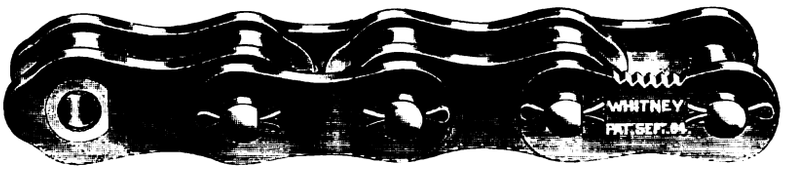
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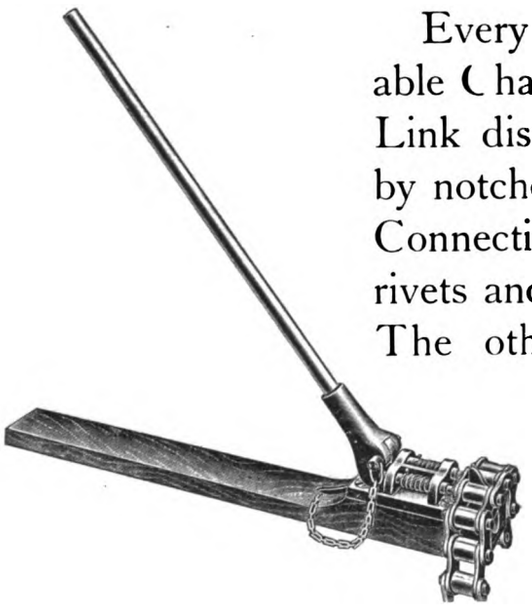
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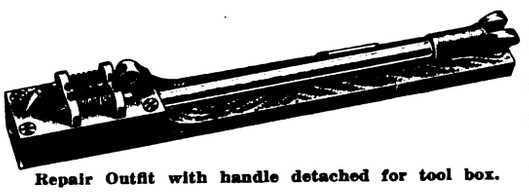
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New "Whitney" Chain Repair Outfit ready for operation.

Every "WHITNEY" Detachable Chain contains one Connecting Link distinguished from the others by notches in the top surface. This Connecting Link fits loosely on the rivets and may be removed by hand. The other Detachable Links are purposely forced tightly on to the rivets but can be easily detached by means of the New Repair Outfit.



Repair Outfit with handle detached for tool box.

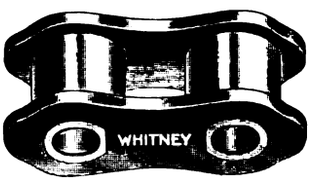
A boy can repair 100 "WHITNEY" Detachable Chains in less time than it would take an expert, with the assistance of a complete machine shop, to repair one damaged direct gear drive.



Side Link, Plain.



Side Link with Rivets Assembled.



Assembled Center Block.



Connecting Link.

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"WHITNEY" DETACHABLE ROLLER CHAIN.

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☞ By a special method of incorporating this cotton fabric into the manufacture of our tires we greatly enhance its normal strength—a fact that partially explains the tremendous amount of hard usage MORGAN & WRIGHT tires are known to stand.

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¶ All of which is but another good point in a thoroly good tire.

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The Commercial Vehicle has reached the highest development in the Oldsmobile.

You will find in our line the vehicle which most fully meets your requirements, whether for city or country delivery, light trucking, city or rural transportation, depot or park service.

Write us for full information and details. There is big money to be made with our commercial cars and it will pay you to get in the game early. Ask for Circular 53.

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OF

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We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
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G & J TIRE CO.

Indianapolis, Ind.

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Are You a Ford Agent for 1906?

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date.

There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season. We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

Write and get in touch with us.

FORD MOTOR COMPANY, - - - Detroit, Mich.

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The BAKER ELECTRIC

The Baker Electric Depot Carriage,



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1906 ANN

Pope-Hartford, Model F

Four Cylinder **20-25 H. P.,** **Price $2500.00**

It is conceded by every one that the POPE MANUFACTURING COMPANY has never had the reputation of making extravagant cla for its product. Generations of special training in the famous Factories of Hartford have developed mechanics who are masters of every fea of fine machine work and with the world's best mechanics and the best talent it is possible to procure we have by experimenting, trying, tes and improving, counting nothing too small to receive attention and nothing too great to be attempted, produced our new MODEL F which c not be excelled at anywhere near the price for quietness, speed and hill-climbing qualities.

Motor. jackets, developing under brake test 28-30 H. P. Valves l encased, the cylinders cast in pairs with integral heads and w Four-cylinder vertical water cooled engine with all gearsocated in the head all mechanically operated and interchangeable. Cy ders and pistons made of special stock and ground to a mirror finish thus insuring perfect compression. Crank shafts of special treated ni steel with liberal bearings. Crank case supplied with two large hand holes on the right hand side of the case through which every bearing the crank shaft is accessible.

Ignition. Jump spark, combined commutator and secondary distributor located between the second and third cylinders and driven f the cam shaft through a pair of spiral gears with a single coil controlled by a lever located on top of the steering wheel not revolving with the wheel.

Lubrication. The lubrication of the engine bearings and cylinders is from a special oiler located on the dash driven by a belt from cam shaft. The bearings of the transmission are provided with ring oilers running in individual wells at the ends of shaft, and the transmission gears, bevel gears and differentials run in oil. (The oiling of these parts is referred to more particularly u their special headings.) All parts of the car not lubricated in this way or by splash are provided with oil or grease cups wherever necessar

Transmission. The transmission is of the sliding gear type having three speeds ahead and reverse and is enclosed in an alumi case with an aluminum cover which is readily removed for inspection purposes. The gears are all made of spe steel hardened. The countershaft has three large bearings substantially bolted into the case and without any opening through the ends of case. All bearings are of special grade phosphor bronze and the gears and bearings with the exception of the front and rear main bearings immersed in oil, the front and rear bearings being lubricated from two oil wells in the bearing case, the oil being carried by a ring to shaft. The gears shift by a hand lever located on the right hand side of the seat, operating through a sector and pinions, a rack on the in of the gear case being directly connected with the sliding gears, the thrust at this point being taken up by a substantial ball thrust bearing.

Carburettor. The carburettor is of special design and of our own manufacture, very flexible and efficient running from 150 R. P. M 1600 R. P. M. and unrivalled in economy of fuel consumption. Carburettor throttle is controlled by a lever located on of steering wheel and not revolving with it.

Control. Controlling levers for ignition and throttle are located on top of the steering wheel engaging with a single sector arranged as not to revolve with the steering wheel. All gears changed by one lever located within easy access of the driver.

Drive. A compensating joint is located between the engine and transmission, and the drive from the transmission is through a lon tudinal or propellor shaft having universal joints at either end through a pinion and bevel gear to the rear axle. These joi are so arranged that all bearing surfaces are thoroughly lubricated at all times. All parts of the joints and shafts are made of special h carbon steel with liberal pins which work in removable phosphor bronze bearings.

Front Axle. The front axle is a solid forging of special steel having forked ends to receive the pivots. The axle is of exceptio strength and extremely graceful in design.

Rear Axle. The bevel gears driving the rear axle consist of a pinion meshing with a gear, both gear and pinion being made fr special steel, the pinion shaft being made integral with the pinion and runs in two Timkin roller bearings. The r axles proper or driving shafts have squared ends which fit square holes in the differential gears, insuring strong and durable constructi The shafts are securely keyed and locked at their outer ends in the wheel hubs and do not carry the weight of the car, but are solely po transmitters, the case and outer tube of the axle carrying the weight of the car. The thrust of the bevel driving gear is taken up by a la ball thrust bearing suitably backed up by hardened steel washers and supported by the main bearing of the case.

Steering. Steering mechanism consists of worm and sector enclosed in a case packed with graphite grease and is strictly irreversi Steering joints provided with spring buffers to relieve road shocks.

Brakes. The car is provided with two sets of brakes, one an external clamping band brake faced with camel's hair belting and acting o drum attached to transmission shaft directly at the rear of the transmission case. The other set consists of two inter band brakes, which are also faced with camel's hair belting and act in drums which are bolted to each rear wheel hub. The brakes are of ample proportion and of strong and powerful construction, either one of them being capable of locking the wheels with a very slight pr sure on the foot levers.

Frame. The frame is composed of armoured ash side pieces 1 5-16 by 4 inches at the centre. The armour consists of steel plates 3- inch thick securely bolted to the side pieces after all the riveting, which is done hot, is completed. The sub-frame wh carries the engine is made of channel steel securely riveted to steel cross members at either end.

Hood & Guards. Hood of improved design opening from both sides. Guards of special design, front guard large and flaring.

Body. The body is of new and graceful design seating five people, with non-removable dust-proof tonneau with double side entra especially easy of access.

Dash. This is of curved sheet steel reinforced with wood, finished in natural color and surmounted by a brass rail.

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JNCEMENT

POPE Hartford AUTOMOBILES

Wheel Base. Wheel base is 98 inches and the tread 56 inches.

Wheels. 34 x 4 front and rear, with ball bearings of large dimensions.

Tires. We will adopt for our regular equipment what we determine to be the best tire on the market from actual tests we are now making.

Gasoline Capacity. 15 gallons.

Water Supply. 5 gallons.

Equipment. Full set of lamps, horn, tools and floor mats.

Pope-Hartford, Model C

Two Cylinder 18 H. P., Price $1600.00

Motor. Two-cylinder horizontal opposed, located cross-wise under the hood with integral heads and water jackets, developing under brake test 20-22 H. P. Automatic admission valve and mechanical exhaust. Cylinders and pistons made of special stock and ground to a mirror finish as in the Model F. Crank shaft of special treated nickel steel with bearings of liberal size.

Ignition. Jump spark from two sets of dry cell batteries carried under front seat.

Lubrication. Engine bearings and cylinders are lubricated by a special oiler located on dash driven by a belt from the cam shaft. The bearings of the transmission are provided with ring oilers running in individual wells at the ends of the shafts. The transmission gears, bevel gears and differentials run in oil. In addition to this there are oil and grease cups provided wherever necessary.

Transmission. The transmission is of the sliding gear type and identical with the transmission used on our Model F.

Carburettor. The carburettor is of entirely new design of the float feed type, very simple, very efficient and flexible.

Control. Spark and throttle levers located on top of steering wheel. All gears changed by one lever located within easy access of the driver.

Drive. The drive is through a longitudinal or propellor shaft having universal joints at either end through pinion and bevel gears to the rear axle.

Front Axle. The front axle is a solid forging of special design with forged yokes and exceptionally strong in all its parts.

Rear Axle. The rear wheel axle is of solid steel running on ball bearings in a tubular sleeve and of same style and construction as Model F.

Steering. Wheel operating through worm and sector. Strictly irreversible, joints provided with spring buffers to relieve road shocks.

Brakes. Two sets of brakes, one an external band brake acting on a drum attached to transmission shaft at rear of transmission case; the other set consists of two internal band brakes acting on drums bolted to each of the rear wheels.

Frame. The frame is composed of ash, armored with steel plates securely bolted after all riveting, which is done hot, is completed. The sub-frames and cross members are of steel, making a very strong and flexible frame.

Hood & Guards. Of improved design constructed of steel, front guard large and flaring.

Body. Of graceful design seating five people, double side entrance type with non-detachable tonneau.

Wheel Base. 88 inch, tread 56 inch.

Wheels. 30 x 3½, front and rear, with ball bearings of large dimension.

Tires. We will adopt for our regular equipment what we determine to be the best tire on the market from actual tests we are now making.

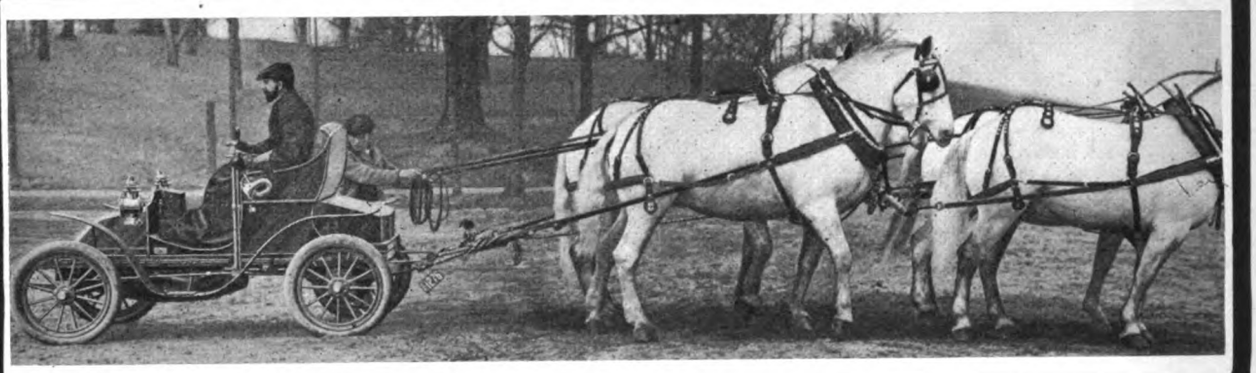
Gasoline Capacity. 11½ gallons.

Water Supply. 4 gallons.

Equipment. Two side oil lamps, two head light brackets, full set of tools and floor mats.

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Autocar Runabout (Type X) $900



The Power of this Runabout

The Autocar Runabout has a motor of 10 mechanical horse-power, which is about equivalent to 15 animal horse-power.

The horses, however, could furnish this power for only 8 hours a day. As the Autocar Runabout can be run for 24 hours a day, it will be seen that if both power and endurance are considered this car is equal to 45 horses.

This tremendous power, coupled to a car weighing only 1200 lbs., gives the Autocar Runabout great speed and hill-climbing ability and is one of the things that make it the most remarkable small car built.

The motor in the Autocar Runabout is of the two-cylinder horizontal opposed type. It is located in front under the hood, where it is instantly accessible. The transmission case may be reached by lifting the floor in front of the seat. This car has three forward speeds and reverse, and shaft drive.

Catalogue descriptive of Type X, $900, Type VIII Tonneau Car, $1400, and Type XI Four Cylinder, Side Entrance Tonneau Car, $2000, with dealer's name, sent free upon request.

THE AUTOCAR COMPANY, Ardmore, Pa., *Member Association Licensed Automobile Manufacturers.*

"QUEEN"

The name stands for a line of cars that has no equal, either as a selling proposition for the dealer, or an investment for the individual buyer.

Staunch in construction, powerful in action, reliable in operation, and simple in control, Queen Automobiles best meet every requirement of automobile worth.

Queen Runabouts. Queen Det. Tonneaus.

Queen Touring Cars.

Made right and sold right by

C. H. BLOMSTROM MOTOR COMPANY,
Detroit, Mich.

C. A. DUERR & CO., Inc. 1787 Broadway, New York City Agents.

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should ***not*** buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the ***two*** cycle two cylinder Elmore engine.

Understand—the ***two*** cycle two cylinder Elmore engine produces ***two impulses every time the fly-wheel turns.***

As you know, the two cylinder ***four*** cycle furnishes only ***one*** impulse every ***fourth*** time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clydo, O.

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THIRD IN ELIMINATION RACE, SEPTEMBER 23rd.

IF YOU BUILD A RACING CAR,

to run 60, 70, or even 80 miles an hour, you won't need any extraordinary mechanical ability. You won't produce much that is of value if you succeed.

BUT

if you become the owner of a **ROYAL TOURIST,** you have a car that can go fast enough to qualify in the **VANDERBILT CUP TRIALS,** and make the round of the course any number of times without the troubles the racing cars had, and one that will stay on the road, carry its passengers with comfort and safety, do its work quietly, and without strain on the motor or running gear.

REMEMBER

The Royal proved itself faster than the racers, and any owner will tell you about its reliability and comfort.

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

ROYAL

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 432 South Fifth St., Minneapolis; AUTOMOBILE SUPPLY CO., Lim., 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.

HAYNES



The Car that Won Honors.

THE HAYNES Car that won honors from America's best and most powerful special racing cars, in the VANDERBILT Trials, was simply a duplicate of our 1906 Touring Cars now going through the factory.

If THE HAYNES stock car defeats racers, what will it do to other stock cars?

We are booking orders and contracting agencies NOW for these cars.

Write us to-day.

The Haynes Automobile Co.,

Members A. L. A. M.

Kokomo, Indiana

New York Chicago

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THOMAS 1906

A PERSONAL STATEMENT FROM MR. E. R. THOMAS.

"Hitch Your Wagon to a Star."

My friends have long known that it has been my cherished ambition to build the best car in the world, or at the very least, one of the greatest.

I do not mean the fleeting reputation gained by enormous outlays for advertising and the performance of road and racing stunts by highly paid employees with special cars or well groomed individuals of social and business prominence always accompanied by factory experts. But I do mean the permanent reputation founded by actual performance in the hands of the general public which comes solely from intrinsic merit.

Years ago—surrounded by noted mechanical talent—we built one of the greatest bicycles of the world, which was better than any foreign continental production. The principles of automobile construction are the same, except that mechanical power is substituted for human. Since 1897 I have been building vertical gas engines by the thousands. Then, why not, at least one of the best automobiles?

I knew that with us it was only a question of design, material and time. It was not a question of experience in fine workmanship. We had that. Nor was it a question of profit, for that would surely follow.

In 1904 daylight began to appear. Two cylinder vertical motors were the vogue. I went one better and built three at the same price. It was far superior to any two cylinder proposition on this side of the world or the other.

Design was greatly improved, crude and accessory manufacturers improved their material, the car proved highly efficient, and the star we had "hitched to" seemed nearer and brighter. It was in this year that I designed the safety device which has saved lives—also the curved dash with small tool lockers and the chain pull that equalizes the strain on the main bearings. We also used chain oilers on the crank and transmission shafts.

In 1905 we built a four cylinder car which, with nominal advertising, no traveling agents, and no performance of road or racing stunts, requiring special cars and highly paid factory experts, we again caught the public favor and quickly sold four hundred big touring cars—no more and no less. We were compelled to refuse many additional orders, some with bonuses above the price, of from Two Hundred and Fifty to $750.00.

It was in this year I patented the now famous dust proof body and introduced lockers and rails for wraps and many other features of comfort and efficiency.

The result in every way exceeded my most sanguine expectations, and the star shone still brighter and was much nearer.

Our success was so great I have about completed a new model fire proof factory constructed entirely of concrete, steel reinforced. The mechanical equipment has been greatly increased. The capacity is one thousand fifty horse power automobiles.

I have the same superb mechanical force who are inspired by the same ambition and who are co-operating with me loyally and energetically to realize our high ideals, and which we believe will be fully realized in the 1906 Thomas Flyer, which has been greatly improved in every detail of workmanship, material and design—notably:—

Forged I beam axles—great, strong steering knuckles—steering apparatus all forged. No brazed joints. Cross steering rod behind front axle. Large separate motors. Mechanically operated valves, opposite sides. Improved radiator fan and pumps. A disc clutch that will not slip under any condition when engaged. Four forward speeds—with one Hyatt roller and five Hess-Bright bearings. Altogether, fifteen Hess-Bright ball bearings, one Hyatt roller and two ordinary ball bearings—twenty-one anti-friction bearings in all. A beautiful new dash and body seating five or eight, as desired. Four great big wide brakes—the foot alone will stop a loaded car on a twenty-five per cent. down grade.

I am very proud of the new 1906 Thomas Flyer, and I believe the American public will be proud of it. The best foreign cars may have some few unimportant details that we haven't got—and we have some important ones they do not possess.

But we have put the design, material, workmanship and money into this car to make it at least equal to the highest priced car in the world, and I believe that the verdict of a just people will, based upon intrinsic merit solely, place the 1906 Thomas among the world's greatest and best, and as such I present it.

E. R. THOMAS,
For The E. R. Thomas Motor Company.

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Glad to Get Back To GOODRICH TIRES

Mr. H. C. Baxter of Walpole, N. H., in a letter of September 12, 1905, writes as follows:

"I am glad to get back to the use of your tires, after having satisfied my desire to test a foreign make, which I have found did not give me as good service on our country roads as yours, which I have used for years, have given me. I shall use your make in the future. At present I have a 24 h. p. Peerless, which I am using to make business trips between our canneries in New Hampshire and Vermont."

Yours truly, H. C. BAXTER.

THE BAILEY "WON'T SLIP" TIRE.

Regular Goodrich construction, but provided with the Bailey "WON'T SLIP" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company
Akron, Ohio

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
CHICAGO, 141 Lake St.
BOSTON, 161 Columbus Ave.
DETROIT, 80 E. Congress St.
LONDON, E. C., 7 Snow Hill.
CLEVELAND, 420 Superior St.
PHILADELPHIA, 909 Arch St.
DENVER, 1444 Curtis St.



Diamond
ENDLESS SOLID SIDE WIRE TIRES

Are the equipment on leading makes of commercial motor vehicles—trucks, wagonettes, omnibus cars, and others.

Their quality is shown by their device.

We shall be glad to write you fully concerning tires of this type for any purpose for which you may contemplate using them.

THE DIAMOND RUBBER COMPANY,
AKRON, OHIO.

BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 No. Broad St.
BUFFALO—715 Main St.
DETROIT—310 Woodward Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
NEW YORK—78 Reade St.
SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
CLEVELAND—223 Huron St.

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G&J TIRES

THE STRONGEST TIRES MADE—because only the best of materials are used in their construction

THE MOST COMFORTABLE TIRES—because most resilient

THE MOST ECONOMICAL TIRES—because, being resilient, they increase the power of the engine, and reduce the consumption of fuel

THE EASIEST TIRES TO HANDLE—because no tire clamps are used

Write for Catalog and Tire Manual

G&J TIRE CO.
Indianapolis,

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

THINK IT OVER

Alfred Wilmarth

Henry S. Morris

Morris & Wilmarth,
Stock Grain Cotton and Coffee
32 Broadway,
New York, July 22nd 1908

MEMBERS
NEW YORK PRODUCE EXCHANGE
NEW YORK COFFEE EXCHANGE
NEW YORK CONSOLIDATED EXCHANGE
BUFFALO CHAMBER OF COMMERCE
BALTIMORE CHAMBER OF COMMERCE.
TELEPHONE 8538 BROAD.
PRIVATE WIRES TO
CHICAGO AND MILWAUKEE.

BRANCH OFFICES
1128 BROADWAY, N.Y.
101 MONTAGUE ST., BKLYN.
134 SO. 4TH ST., PHILA., PENN.

Mr. C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have not people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.
H. S. M. - C.

Henry S. Morris

ALL SIZES CARRIED IN STOCK

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request.

CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 38th St., New York. 318 & 320 N. Broad St., Philadelphia, Pa. 202 & 204 Columbus Ave., Boston, Mass. 405 Erie St., Cleveland, Ohio

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CADILLAC



KING OF ENGLAND OWNS 1 DAIMLER, 1 DARRACQ, 1 MERCEDES

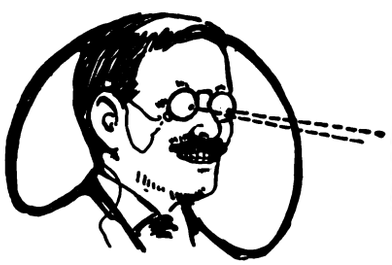


EMPEROR OF GERMANY OWNS 3 MERCEDES, 1 FIAT

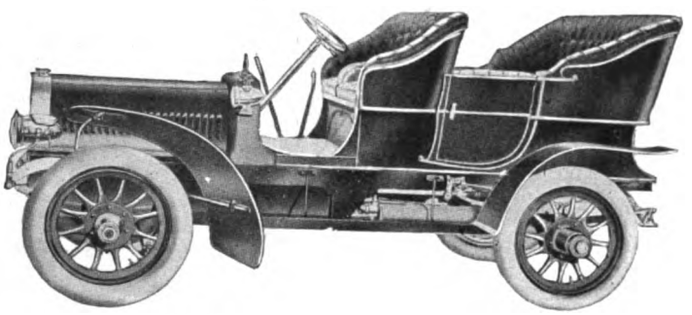


CZAR OF RUSSIA OWNS 1 DARRACQ

The Cars of the Foreign Monarchs vs.



PRESIDENT ROOSEVELT HAS HIS EYE ON A CADILLAC



MODEL D. 4 CYLINDER CAR. $2,800



PRESIDENT OF FRANCE OWNS 1 C. G. V.



KING OF SPAIN OWNS 1 PANHARD, 1 RICHARD BRASIER

CARS OWNED BY MONARCHS

Paris, Aug. 12—M. Loubet, president of France, is now up with the times, having, after much persuasion, ordered his first automobile—a 25-horsepower C. G. V. with limousine body. This fact has led to the compiling of a list of monarchs and rulers of states who possess automobiles. It is as follows: King of England, a Daimler, a Darracq and a Mercedes; emperor of Germany, three Mercedes and a Fiat; czar of Russia, a Darracq; king of Italy, a Panhard and a Fiat; king of Spain, a Panhard; king of Portugal, a Panhard; Queen Wilhelmina of Holland, a Mercedes; shah of Persia, several Gardner-Serpollets; king of the Belgians, two Mercedes and a Mors; prince of Monaco, a Mercedes and a motor cycle; queen of Italy, a Wolseley.



KING OF ITALY OWNS 1 PANHARD, 1 FIAT

The Choice of American Men

A recent canvass of ten Eastern States showed 1131 Cadillacs owned therein—the other makes ranged from 750 down to 5 or less.

WHY DO YOU SUPPOSE THIS WAS?



SHAH OF PERSIA OWNS SEVERAL GARDNER-SERPOLLETS



KING OF PORTUGAL OWNS 1 PEUGEOT



KING OF BELGIUM OWNS 2 MERCEDES, 1 MORS

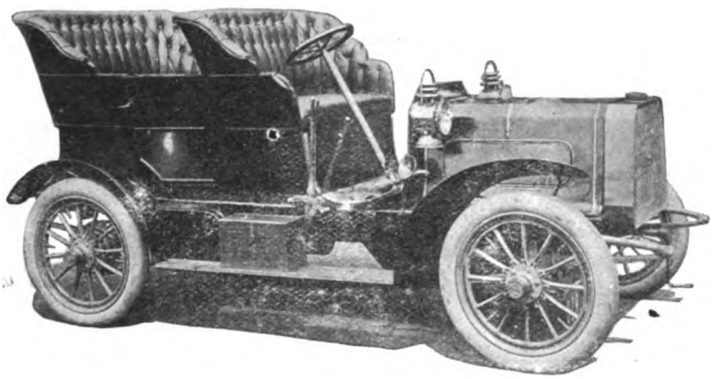
CADILLAC AUTOMOBILE CO., - - - Detroit, Mich.

Member Association of Licensed Automobile Manufacturers.

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GROUT

The New Grout Gasoline Light Touring Car



Grout Bros. Automobile Company

Orange, Mass.

Price $1,800.

28-30 H. P., 4 cylinder, balanced motor, high tension ignition using one coil with distributing commutator.
Forced ventilation by fan.
Mechanically operated valves.
Inlet valves interchangeable with exhaust valves.
Control on steering wheel to gas and ignition, no motion transmitted to these levers by movement of steering wheel.
Gear, three speeds and reverse actuated by single lever.
Wheels, 30 inch artillery, wood, ball bearings, 3½ inch tires.
Armored frame.
Steering by irreversible worm and sector, dust proof and oil tight.
Lub ication; mechanically operated oiler, a definite amount of oil to all cylinders, crank bearings, connecting rod bearings, etc.
Lubricating system has received great attention and is particularly thorough. It is non adjustable, that is, set at the factory and needs only to be supplied with oil.

MICHELIN

Fifty per cent. of the four cars finishing in The Vanderbilt Cup Race were equipped with

MICHELIN TIRES.

All cars in the contest, equipped with Michelin Tires, experienced no trouble from punctures, or other sources.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

6 West 29th Street, New York

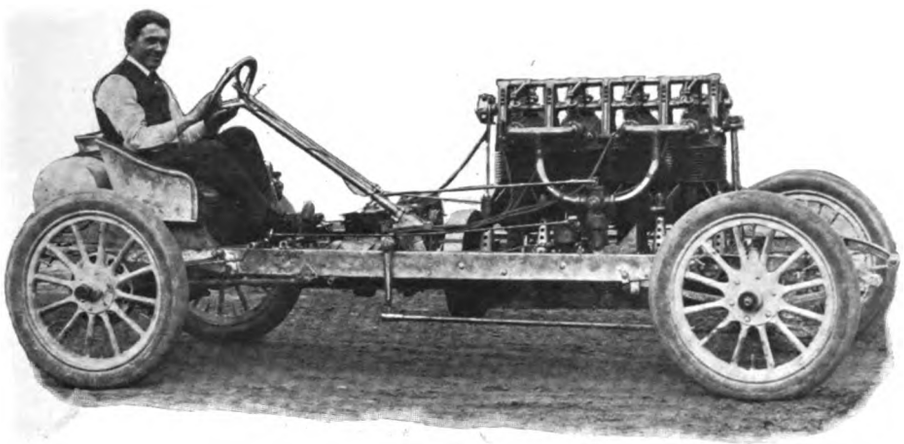
Telephone—4657 Madison

E. D. WINANS, General Manager

BRANCHES.

Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
Philadelphia, 322 No. Broad Street.
Washington, 1330 New York Ave., N. W.
San Francisco, 307 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street.
Pittsburg, 5903 Centre Avenue.
Utica, 12-18 Lafayette Street.
Poughkeepsie, 14-20 Catherine Street.
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
Asbury Park, N. J., Main St. and Sewall Avenue.
Morristown, N. J., 1 South Street.

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Taken ten days before the Eliminating Trials.

The Premier Vanderbilt Cup Racer will not compete in the finals

for the simple reason that the Racing Board—as their chairman admits—refused to consider it in selecting the team to represent America.

This car was finished and subjected to more than 500 miles of road and speed tests before the date of the eliminating trials. However, it was overweight by about 100 pounds. We inquired if we could enter the eliminating trials, agreeing to reduce the weight later in such a way as would satisfy the committee that we had not sacrificed the reilability of the car, and agreed that we would abide by their decision. We were advised that we could not do this, and accepted the decision without a murmur, but immediately set about to reduce the car to the proper weight.

Monday, after the eliminating trials, we were advised that three of the only five cars which finished in the trials, would be dropped out, which would necessitate filling the created vacancies with cars which for some reason had failed to qualify in the elimination trials. If the eliminating trials meant anything, we consider that the five cars which finished should be allowed to compete in the finals. Since the failure of the committee to take this view (as evidenced by their decision) created three vacancies, which, if filled, must of necessity include three cars which for some reason failed to quality, we could not see that only a failure on our part to weigh in originally, should eliminate us from further consideration, any more than the failure of other cars to finish after they had started in the contest.

On Monday following the Elimination Trials, we wired the committee that our car could weigh in, *and offered it subject to any tests they might designate.* We were advised by the chairman that "We were compelled to select the team without reference to your car." IS THIS AMERICAN SPORTSMANSHIP?

PREMIER MOTOR MANUFACTURING CO.,

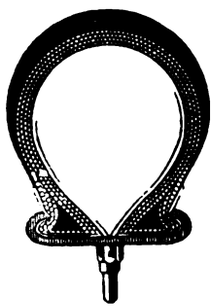
No. 212 SHELBY STREET, - - - - - - INDIANAPOLIS, IND.

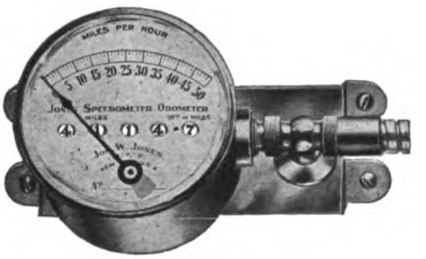
Members American Motor Car Manufacturers Association.

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THE AUTO SUPPLY CO.

1662 BROADWAY
NEW YORK CITY

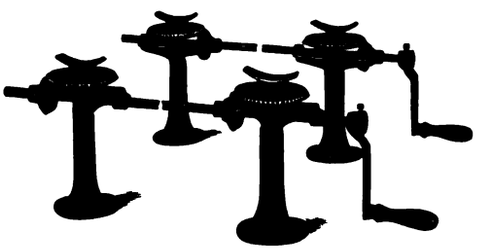




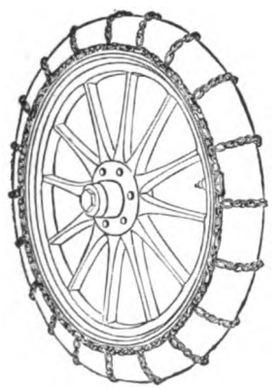




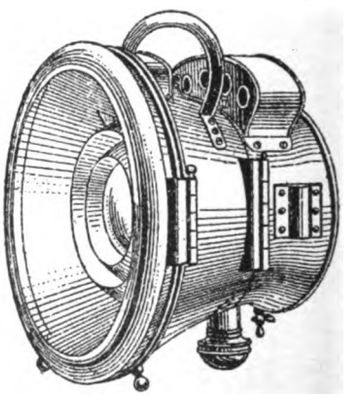
WE have in stock the best and most complete line of up-to-date automobile supplies.
Our prices are right, and quality always exactly as represented.











The Auto Supply Company,
1662 Broadway

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Timken-Lemoine Front Axle.

Much of the satisfaction resulting from the use of Timken Roller Bearings is due to the simplicity of construction,—few parts and every part a special feature.

We think this explains why it is easy to sell so many of them and why owners of machines demand them.

A good automobile is no stronger than its weakest part. Can you afford to have anything but Timken bearings?

Positive adjustment. No loose parts. Perfect end thrust and you can take up the wear.

All types front and rear axles, Lemoine or Elliott knuckles, direct and chain drive rear axles, truck axles, wheels, channel rims.

TIMKEN ROLLER BEARING AXLE CO.

Main Office and Works: CANTON, OHIO.

This AUTO TIRE has no BAD HABITS

It won't creep—it won't rim-cut—it won't come off the rim when run deflated no tire bolts required to hold it on the rim—and you can take it off and put it back in 60 seconds, using nothing but the hands. And it's a Tire, besides, that's as resilient as a "soft" tire, and will outwear most "hard" tires.

Sounds like a fish story, doesn't it?

But it's a *fact*, nevertheless.

Barney Oldfield didn't believe it, either, but he does now.

We *showed* him—he saw with his own eyes—and now he uses the Goodyear Detachable Auto Tire with the Universal Rim in all his races.

He used this tire at the Boston meet on Sept. 9th, where he made five miles in 4:55 and a mile in :55 1-5—breaking the track record.

You ought to hear Barney's chaffeur sound the praises of the Goodyear Detachable to all who will listen to him—hear him tell how reliable it is—how it saves him time, trouble and worry and makes his position easy. He says he never thought it possible (before using the Goodyear) to embody all the good points a tire *ought* to have in one single tire.

We wish you could come with us to the factory or to one of our branch stores. Then you could see in no time for yourself just why and how these things are true. You can "see through" it all instantly when the tire is before you.

We'll try, however, to explain just *one point*, here.

Why the Goodyear Detachable Auto Tire is *Durable* and *Resilient* at the same time.



Look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it.

Now right underneath this is the remainder of the outer casing (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The soft rubber portion is strengthened by having our *special fabric* vulcanized into it. This fabric is not the hard, inflexible sail cloth used in ordinary tires, but is woven like basket work, or an open-work stocking, and *gives* back and forth under pressure, and allows the elasticity of the rubber full play.

The dense rubber, the soft rubber and the special fabric together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

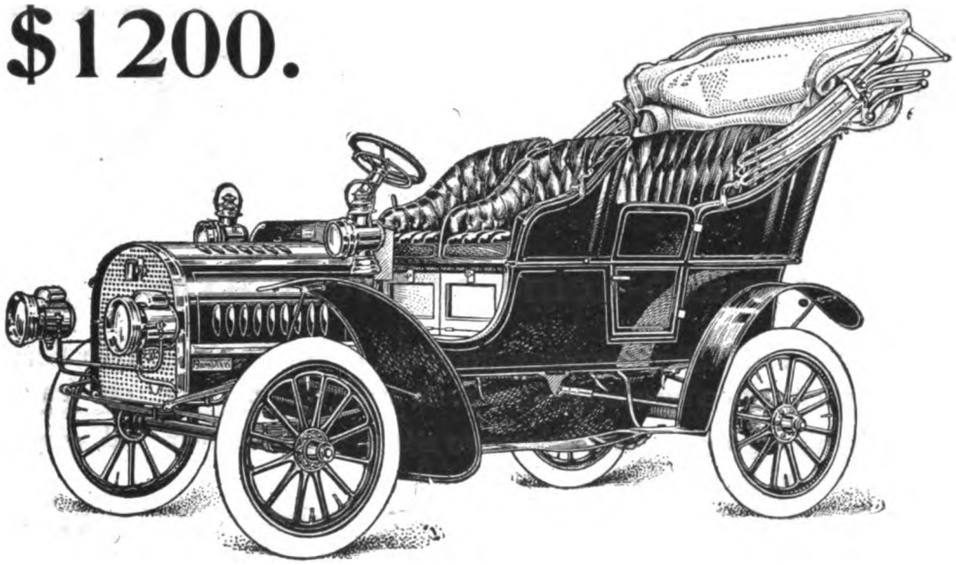
Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove Street, Akron, Ohio.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St., and Detroit, 242 Jefferson Ave.

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$1200.



Rambler

The Deacon's One Hoss Shay became famous not for its complicated "frills," but because it ran and kept on running.

This story is repeated in the Rambler. Every complication of questionable value is omitted and every effort has been devoted to serviceability, power, utility and the utmost simplicity of design and operation.

The result is a car of unfailing dependability that will travel day after day without tinkering and adjustment.

Surrey Type One, shown above, with full equipment of lamps, horn, tools, etc., $1200. Cape top $100 extra; canopy top with glass front $100 extra.

A practical road demonstration at any of our branches or agencies, will convince you of its merits.

THOMAS B. JEFFERY & COMPANY, Kenosha, Wis.

BRANCHES:
CHICAGO, MILWAUKEE,
BOSTON, PHILADELPHIA.
SAN FRANCISCO.

REPRESENTATIVES IN ALL LEADING CITIES.

New York Agency,
134 W. 38th St.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, October 19, 1905. No 4

NEW G & J TIRE COMING

The Indianapolis Company Has a Big Surprise in Store—An Inkling of Its Nature.

There's a G & J mechanically fastened tire on the way; in fact, it is almost ripe for marketing.

This rather surprising news leaked out early this week, and when it becomes more generally known it will cause something of a sensation, so long and so firmly have the G & J Tire Co. been wedded to the clincher type of tire.

There is no reason to believe that the latter will lack for attention—such a state of affairs seems improbable—but the mere statement that the G & J people are making ready a tire of the other sort will cause all who have to do with tires to set up and take notice and to await developments with eagerness.

No F. I. A. T. Factory for America.

Up Binghamton way—Binghamton, in New York—they've had visions of a factory producing Italy's renowned F. I. A. T. car right here in America. The public prints in that part of the state are talking about it at length, and in big black headlines. Where the report originated is not known, but at any rate Hollander & Tangeman, the American representatives of the F. I. A. T., say there is not a word of truth in it. The establishment of a factory in this country, they say, is not contemplated, has never been discussed and nothing is more unlikely.

Smith and Eames Sever Contract.

On October 15 the contract between the A. O. Smith Co., Milwaukee, Wis., and Hayden Eames, Cleveland, Ohio, was terminated. Henceforth the Smith company will themselves handle the sale of their products.

Fosdick Gets the Studebaker

The Harry Fosdick Co., Boston, have acquired the New England agency for the Studebaker line, both gasolene and electric vehicles. The Fosdick store at 53 Stanhope street will be formally opened November 1.

Prest-o-lite Factory for Pacific Coast.

There is to be a Prestolite gas tank and charging factory on the Pacific coast, in either San Francisco or Oakland, Cal. The demand west of the Rockies for that new means of illumination is deemed sufficient to justify it. The call has been met with reasonable satisfaction, but the items of time and freight rates have hindered proper development, and these questions the factory in California will solve quickly and for all time. F. E. Avery, of the Concentrated Acetylene Co., left Indianapolis on Tuesday to prepare the way and complete the necessary arrangements.

Brady on His Own Account.

Jackson ("Jack") Brady, formerly connected with William E. Metzger, and for the last year retail sales manager of the Packard Motor Car Company, at Detroit, has gone into business for himself in that city, and will erect a large and pretentious garage. He has secured the Michigan State agency of the Peerless, and the local agency of the Packard Car.

Firestone to Open in Detroit.

The Firestone Tire and Rubber Co., Akron, Ohio, are making ready to establish a branch in Detroit, and already have chosen the man to manage it. He is E. E. McMasters, for a number of years manager of the Hartford Rubber Works Co.'s depot in that city. McMasters has resigned the latter office in order to accept the new one.

Foss-Hughes Will be Their Style.

Foss-Hughes Motor Car Co. will be the style under which those two former Pope managers will operate when they begin business in Philadelphia on the first prox. In addition to the Cadillac and Pierce lines they have secured the agency for the Baker electrics.

Dowling Gets Pierce Territory.

In the readjustment of affairs following the dissolution of the firm of McGuire & Dowling, Boston, Mass., J. A. Dowling, of that city, has obtained the Pierce agency for Maine, New Hampshire and Vermont. He will handle the business from either Portland, Me., or Portsmouth, N. H.

THOMAS BUYS $350,000 SITE

And Will Build a Palatial Garage on Broadway—Location is a Choice One.

E. R. Thomas, of Buffalo, this week perfected arrangements that will cause the Thomas banner to flutter in the breezes of the metropolis in an impressive fashion, which is to say that acting as an individual he paid $350,000 for a parcel of real estate at the southeast corner of Broadway and Sixty-third street, on which he will erect what is planned to be the most commodious and palatial four-story salesroom and garage in all New York.

The site measures 114 by 145 feet and practically abuts on Central Park. Although in the immediate vicinity of the congested automobile "colony" on Seventh avenue and lower Broadway, it is removed from them, being on that portion of Broadway which formerly was styled the Boulevard—a wide asphalted thoroughfare bisected by a neutral ground. It will give the garage a "pride of place" that is undeniable. When completed, the structure will be leased to Harry S. Houpt, the New York agent for the Thomas cars, who but four or five months since removed to a new garage on Seventh avenue that was also built specially for him.

Elmore to Launch Four Cylinder Car.

When the Elmore line for 1906 is uncovered it will disclose at least one fine large surprise—a 50-horsepower, four-cylinder car equipped with the Elmore two-cycle engine, which will list at $3,000. There is believed to be but one other four-cylinder, two-cycle car in existence, so the new Elmore will have rare distinction. One of those favored with an advance view describes it as "sumptuous." In addition the Elmore Manufacturing Company will market a 24-horsepower model at $1,500—also a new comer.

Cadillac Abandons Three Cylinders.

After all, the Cadillac Automobile Company will not market a three-cylinder model. That idea has been abandoned and instead, all of the big new Cadillac cars will be of four cylinders, rated at respectively 22, 30 and 40 horsepower.

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In the Retail World.

Abram B. Meyer is building a 50x83-foot garage at Nos. 9 and 11 Hill street, Newark, N. J. The cost will be $4,803.

Robbins Bros., who have the Lynn (Mass.) agency for the Waltham-Orient, will open a branch at Columbus avenue and Elliot street, Boston, on December 1.

E. G. Mooney and Edward Seely, as the Central Automobile Co., Pittsburg, Pa., are building a one story brick garage, 50x115 feet. It will be located in the East End, on Broad street, near Euclid avenue.

John Besley and Nick Nelson have joined hands and capital and will endeavor to sell automobiles to the residents of Waukegan, Ill. A plot of ground on Madison street, on which a garage will be erected, has been purchased for $8,000.

The W. F. Embree Co., Lynn, Mass., has moved from its old plant on Willow street to more spacious quarters in the new McGarry Building, at Union and Washington streets. In connection with their regular machine work, they will conduct a garage.

Parkersburg, W. Va., and Chillicothe, Ohio, are said to have made flattering inducements to the Oscar Lear Automobile Co. to move its plant from Columbus, Ohio. Meanwhile the local business men are endeavoring to keep the industry in Columbus.

The Atlas Automobile Co., Pittsburg, will build a two story and basement garage of concrete construction, 85x120 feet, to cost $25,000. The building will contain salesrooms, repair shop, electric charging plant and storage room for three hundred cars.

Plans have been drawn for the new building to be erected for the Detroit Auto Specialty Co., in the city from which the company derives its name. Specifications call for a two story building, solid brick in construction, 45x183 feet. The estimated cost is $10,000.

Thomas S. Morse, who started in business at Pittsfield, Mass., last spring, has found his present garage insufficient to accommodate the needs of summer tourists. He accordingly will raze the small adjoining buildings and extend the garage to Church street, doubling its capacity.

S. A. Miner, the Hartford, Ct., agent for the Knox and Pierce-Arrow cars, who took out papers last week as the Miner Garage Company, is building a two-story fireproof brick garage at High and Allyn streets, that city. The building will be 110x86 feet, and have a floor space of 15,000 feet. The salesrooms, offices and waiting rooms will occupy the first floor, while on the second will be the storeroom and repair shop. It will be completed by January.

Somebody of the name Nelson wanted to build a one story frame garage, 40 by 70 feet, on the west side of the Boulevard, between Cottage street and West Newark avenue, Jersey City, N. J. He accordingly secured a permit, but now property owners in that vicinity have asked the Board of Aldermen to revoke the permit, giving as their reason that the use of gasolene in the building would be conducive to fire. The protest has been referred to the Aldermanic Committee on Laws and Ordinances for adjudication.

De Turckheim Disappears; Charges Follow.

Judge Holt, in the United States District Court, has appointed Lindsay Russell receiver to straighten out the affairs of Frederick de Turckheim, who was in business at 215-217 West Forty-eighth street, New York City, but who, it is alleged in the petition, has "skipped" the country, leaving debts amounting to $2,246. Part of this amount is a debt of the American branch, De Dietrich Motor Car Company, which de Turckheim assumed, and the balance for goods sold to de Turckheim on February 18, 1905. The Continental Coautchouc Company is the petitioning creditor. It is charged in the petition that the alleged bankrupt has drawn his cash balance from the banks wherein they were deposited and that the large stock of cars which he had on hand October 5 have also disappeared as mysteriously as he. De Turckheim was formerly known as president of the American De Dietrich Motor Car Company when that concern was at 1½ West Thirty-fourth street, New York City.

Woods Gets a New Location.

A deal has just been closed whereby the Woods Motor Vehicle Co., of Chicago, Ill., secures a new building on the west side of Cottage Grove avenue, ninety-four feet south of Twenty-fifth street. The building will have a frontage on Cottage Grove avenue of 115 feet, and extend through to Calumet avenue. The lease runs for ten years from May 1, 1905, at a rental of $9,000 a year, the owner paying taxes and insurance.

Receiver for Detroit Concern.

Pending the hearing of foreclosure proceedings instituted by him as trustee under a mortgage, Frank N. Crosby, a receiver has been appointed for the Commercial Motor Vehicle Co., No. 257 Franklin street, Detroit, Mich., of which J. B. Book is president and Frederick S. Evans secretary and manager. Crosby alleges that default has been made in the mortgage agreement.

Kennedy with a Million in Cortland.

Cortland, N. Y., is on the eve of securing a new industry, and a big one, as some figures go. On the strength of claims made for a new automobile which Thomas J. Kennedy is said to have invented, the Cortland Automobile Co. will be incorporated, with capital of $1,000,000. The disused plant of a wagon manufactory has been optioned.

The Windsor Motor Car Co. has been organized at Evansville, Ind., to manufacture automobiles. Chicago and Evansville capital is interested in the project.

The Week's Incorporations.

Milwaukee, Wis.—E. W. Arbogast Motor Co., under Wisconsin laws, has filed a notice of dissolution.

Detroit, Mich.—Fee-Bock Auto Co., under Michigan laws, with $2,500 capital; to make automobiles. Corporators not named.

Albany, N. Y.—Auto Exchange Co., under New York laws, with $500 capital. Corporators—William H. Dennin, Charles C. Kelley and T. J. Quilliman.

Buffalo, N. Y.—Manzel Bros. Co., under New York laws, with $30,000 capital; to make lubricants. Corporators—Adolph, Herman J. and Fredericka Manzel.

Detroit, Mich.—Detroit Auto Specialty Co., under Michigan laws, with $3,500 capital. Corporators—John A. Wilson, Hyman L. Geldman and J. L. Maniere.

Aurora, Ill.—Practical Automobile Co., under Illinois laws, with $100,000 capital; to make automobiles. Corporators—D. D. Culver, Thomas W. Green and Merrick Edwards.

Quincy, Ill.—Quincy Automobile Co., under Illinois laws, with $50,000 capital; to manufacture automobiles and parts. Corporators—J. W. Cassidy, H. Chatten and W. H. Govert.

Cleveland, Ohio—The Standard Automobile Co., under Ohio laws, with $10,000 capital. Corporators—F. B. Williams, T. H. Hoggsett, M. G. McAleenan, George H. Smith and George H. Kelly.

Boston, Mass.—Automobile Sales Co., under Massachusetts laws, with $10,000 capital; to deal in automobiles. Corporators and officers—President, Lorenzo D. Bates; treasurer, Fred S. Macalaster.

Troy, N. Y.—Troy Automobile Exchange, under New York laws, increases capital stock from $5,000 to $50,000, par value $100. Corporators—William H. Dennin, Charles C. Kelley and E. Augustus Dennin.

New York City, N. Y.—Automobile Buyers' Association, under New York laws, with $10,000 capital; to manufacture and deal in automobiles. Corporators—Samuel C. Meer, Eugene C. Harding and Clarence E. Mandy.

Summit, N. J.—Summit Garage Co., under New Jersey laws, with $25,000 capital; to deal in automobiles. Corporators—Walter C. Sampson, W. C. Johnson, Charles A. Grant, William L. Lampson, Charles S. Hardy, Edward Benedict and B. C. Wilson.

New York City, N. Y.—Manufacturers' Motor Car Co., under New York laws, with $50,000 capital; to manufacture engines, tools, machinery, etc. Corporators—F. C. Henser, Dana T. Ackerly and William H. Morgan.

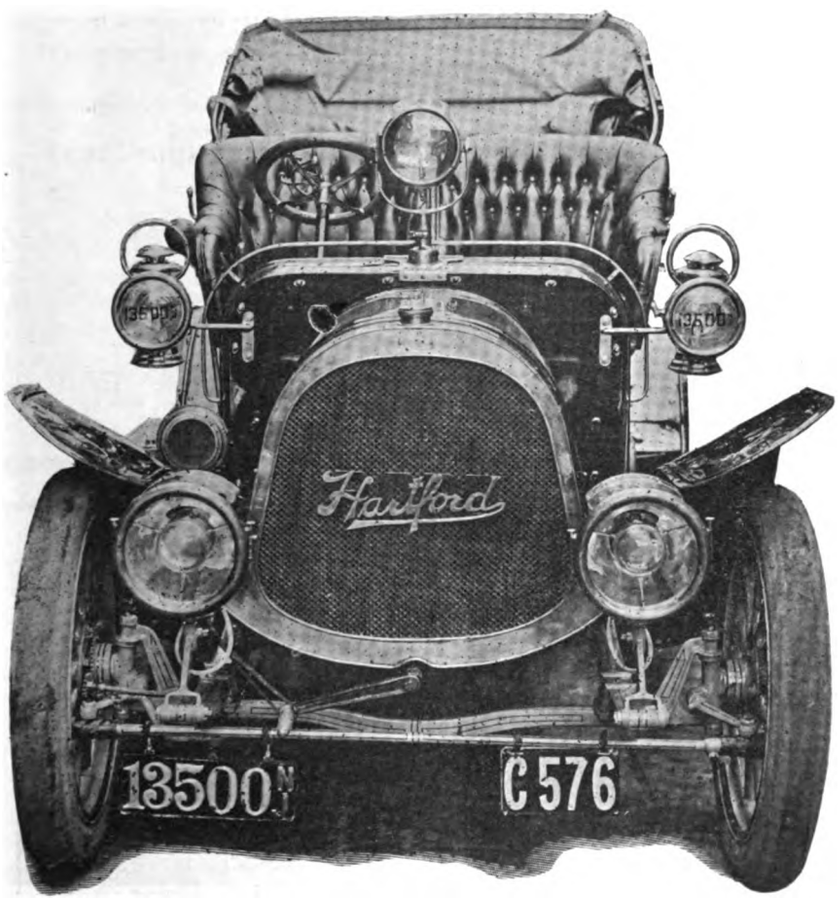
New York City, N. Y.—Austin-Cormack Engine Co., under New-York laws, with $5,000 capital; to make engines, motors, etc. Corporators—Frederick Cormack, William K. Austin, Maurice H. Cormack and George M. Kennoch.

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POPE'S NEW HARTFORD

Features of the New Four Cylinder Member of that Branch of the Family.

Of the totally new models which the Pope Mfg. Co. will market for 1906, most interest probably will centre in the four cylinder Pope-Hartford, shown by the accompanying illustration. It is of the style that has commonly come to be accepted as representing the highest degree of convenience and efficiency—that is, the four cylinder vertical



type, with the engine located under the bonnet. In the present instance all the improvements that have by long experience demonstrated their fitness have been incorporated, together with a number of novel features evolved in the Pope draughting rooms and perfected by the engineers of the company's staff.

The cylinders are cast in pairs, with integral heads and water jackets, and while their dimensions are not given, the engine is said to show 28-30 b. h. p. under test, although the car is nominally rated at 20-25 horsepower. The valves are located in the heads, are all mechanically operated and interchangeable, and all gears of the time shafts are incased. The crank case is provided with two generous sized hand holes, through which every bearing of the crank shaft is readily accessible. A compensating joint is placed between the engine and the change speed gear box, which is of the standard sliding gear type inclosed in an aluminum case, and gives three speeds forward and reverse. The specially hardened steel gears are mounted on large shafts, the counter shaft being provided with three substantial bearings solidly bolted into the case, which has no end openings, as is customary in many. All bearings are of high grade phosphor bronze, and the gears and bearings, with the exception of the front and rear main bearings, are immersed in oil, these being lubricated from two oil wells in the bearing case by means of ring oilers. The gears are shifted by a single hand lever at the right of the driver through the medium of a sector and pinions, a rack on the inside of the gear case being directly connected with gears, while the thrust at this point is taken up by a substantial ball thrust bearing. Transmission is by propeller shaft, which is equipped with a universal joint at each end, these joints being so arranged that all bearing surfaces are kept well lubricated. All parts of the joints and shaft are made of a special high carbon steel, with liberal sized pins working in removable phosphor bronze bearings. The pinion shaft of the bevel gear is made integral with the pinion itself, and runs on two Timken roller bearings. The split rear axle proper, or driving shafts, have squared ends fitting in holes in the differential, insuring a strong connection and durable construction. These shafts are securely keyed and locked at their outer ends in the wheel hubs. The thrust of the bevel driving gear is taken up by a large ball thrust bearing, supplemented by hardened steel washers and supported by the main bearing of the case.

Ignition is by jump spark, a combined commutator and secondary distributer being located between the second and third cylinders, and is driven from the cam shaft through a pair of spiral gears, while the single coil is placed on the dash, which also accommodates a belt driven lubricator supplying the cylinders and engine bearings. The carburetter is a special Pope design made by the company, and has been found to combine great flexibility with a high degree of efficiency. Throttle control is by the usual small lever rising out of the centre of the steering wheel, as does also the ignition advance lever, neither, however, revolving with the wheel.

External clamping band brakes faced with camel's hair belting and acting on a drum attached directly to the transmission shaft at the rear of the change speed gear case, and internal expanding brakes on the same kind on drums bolted to each rear hub, constitute the stopping power, either branch of which is said to be capable of locking the wheels with slight effort. A summary of its remaining specifications is as follows: Wheel base, 98 inches; tread, standard; gasolene capacity, 15 gallons; water, 5 gallons; double side entrance, non-removable tonneau; the equipment comprises the regulation set of five lamps and generator, horn and tools. Without top this new model lists at $2,500, and, as will be noted from the accompanying head on view, the form of radiator employed gives it a distinctive appearance.

Cars for Russian Use.

C. S. Smith, Great Britain's consul general at Odessa, Russia, in his report to the Foreign Office, states that "motor cars are coming largely into use for communication between country houses and the nearest town or railway, and also for inspection of estates. At present motor cars are supplied to Odessa by the United States, France and Germany. For long runs the 12 horsepower machine is bought; for estate inspection, etc, the 8 horsepower engine. Any one who wishes to try his luck in South Russia should remember that the roads are bad and repair shops may be far away, so that strength and simplicity are more than ever desirable. Water is often difficult to obtain, so that steam motors should have water space sufficient for long runs without need of replenishment."

Densmore Joins Centaur Staff.

W. R. Densmore, long connected with the Packard Motor Car Co., Detroit, has resigned his office with that company to engage with the Centaur Motor Vehicle Co., Buffalo, N. Y. The Centaur company, incidentally, have recently secured the Peerless agency for Buffalo and vicinity.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident=Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintenance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 784-786 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 828 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 428 So. Clinton St.
BUFFALO, 898 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS, 3908 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1530 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St
LOS ANGELES, 1084 So. Main St

A CADILLAC Dealer

Mr. C. C. Henry of Summit, N. J., who has sold over 40 Single Cylinder Cadillacs since June 15, 1905, recently placed the following four-inch double column "ad." in the two largest local papers published in his locality : —

WANTED
Second-Hand Model F Cadillac
at once. State Price.
C. C. HENRY,
Cadillac Factory Agent,
SUMMIT, NEW JERSEY.

The Jerseyman, Sept. 22, 1905.

WANTED
Second-Hand Model F Cadillac
at once. State Price.
C. C. HENRY,
Cadillac Factory Agent,
SUMMIT, NEW JERSEY.

Madison Eagle, Sept. 22, 1905

WANTED.—A Second-Hand Model F Cadillac, at once. State Price.
C. C. HENRY, Cadillac Factory Agent.

Herald, Summit, N. J.

Mr. Henry, writing under date of October 3rd, 1905.

"I did not get a single reply. No one in this country wants to dispose of their Single Cylinder Cadillacs."

The above ought to convince most any level-headed dealer that the Cadillac agency is a valuable asset.

CADILLAC AUTOMOBILE COMPANY, Detroit, Mich.

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☞Those who are interested in motor vehicles will find the facilities and information of our office always at their command.

To Facilitate Matters Our Patrons Should Address us at P. O. Box 649.

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NEW YORK, OCTOBER 19, 1905.

The Contest for the Cup.

If it is possible for the glory of Tracy's performance in the Vanderbilt Cup race to blind one to the pitiful shortcomings of the other American contenders, that event must be written a magnificent achievement—an event that compares with the periodical struggles for the America Cup emblematic of international yachting supremacy.

There are those—there always will be those who wear their whiskers in knots or whose blood runs cold who find no fascination in speed—in contests of skill and daring in which the element of danger exists. They will condemn and decry, but the world—the great, big world—will laugh as it has laughed at them. The world loves speed, loves skill, admires daring, it matters not what form it may assume. Such love, such admiration, is inherent. Man wants no horse drawn car when an express train is available.

The man who will not, on occasion, "take a chance" and brave a bit of danger, or thrill when others do so, does not really live—is not fit to live. And though for the moment he may shudder when he sees such amazing speed, such marvelous skill, such magnificent daring as is exhibited in such events as the race for the Vanderbilt cup, the man in him must come to the surface and he must be glad that he is there to see it—there to experience the thrill.

The memory of that man Lancia—the realization that human hands can safely guide a ponderous wheeled vehicle at seventy-five miles per hour, or eighty miles, for hour after hour on unrailed earth—earth none too smooth and replete with twists and turnings—it is a memory worth retaining. It points the way, as the Motor World said long ago, to that day when men may breakfast in New York, lunch in Buffalo, and dine in Chicago. It points the way to that era of real rapid transit. For if men may travel seventy miles per hour on unrailed earth what may they not do when the same vehicle, the same form of power, is adapted to travel on the smoothest of prepared steel rails?

It was the sage Macauley who told us that next to the alphabet the greatest benefit to man were those inventions that abridged disance. By this standard who will measure the benefit of the motor car? Who will deride such as the Vanderbilt cup event that helps open the eyes of the world to such great and limitless benefits?

It was a great race—a splendid spectacle. The tremendous and unprecedented and unexpected outpouring of the multitudes—too great to be estimated in numbers—proved the public interest—proved how keen is the relish of speed and skill and daring. The fact that all critics save the professional critics and the men with tangled beards and disordered livers have been silenced—the fact that those people on whose hearthstones the race was held are most eager for the next one, is strong testimony—eloquent, expressive testimony. Danger? Why, the disregard of it was greater by the multitudes than by the skillful contenders themselves. It was the one discomfiting feature.

If the race was a good thing for France and for Italy—and it was—it was a better thing for America. It taught us many things that will be turned to profit. Let us forget Christie and White and say that America did no worse than Germany or Italy. Misfortune is the hazard in all sports. It fell to America in large portion, but when all is said and done Tracy's performance proved that America asks no odds, and requires few, of the foreign constructors of automobiles or of tires. Of tires none gave so good an account of themselves as the American article, and if American cars overheated or suffered breakages, so, too, did the foreign cars overheat and break.

There was glory enough for all in the race.

Every promoter of a contest looks to the trade to make it a success, that is to say, they expect the trade to supply the entries, every contest, of course, being supposed to redound to "the good of the industry." It is rare, however, that the trade is consulted or its wishes regarding time or place sought or respected. It now appears that the recent resolution of the N. A. A. M. not to engage in any further contests this year was designed to check this tendency and to discourage the holding of contests at this season of each year. The manufacturers are too busily engaged with the serious work of producing the new models to have time or men to spare for anything else. The reason and justice of the situation should be apparent to all.

Charity covers a multitude of sins. Let the Vanderbilt Cup commission, which in defiance of justice, of decency and of protest and criticism permitted such as the Christie car to battle for the honor of America to the exclusion of tried and better cars—let the members of that commission hide their diminished heads and be glad that the mantle of American charity is so big and so broad. If their feelings are keen they must, when they now think of that disgraceful episode, feel like very much less than the proverbial thirty cents. It is well to close the chapter with "Go and sin no more."

Two shows running concurrently in New York already have settled the "show question" for a number of manufacturers. They will not exhibit at either one. They are the manufacturers of certain materials or fittings. They could "be happy with either were t'other dear charmer away," and though they wish to be identified with the automobile industry they have not two sets of men that they can spare to be in attendance at exhibits at both shows.

One of the numerous guides for the motorist, advises the use of a combination of gasolene and alcohol to increase the speed of a car. Presumably the intention is to use the former in the car and the latter in the driver. The result is usually very effective under such circumstances.

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FRANCE DEBATES WITH ITSELF

Selfishly Seeking to Kill Cup Races, a Secret Session Strives to Turn Effort to Tires.

Paris, Oct. 6.—The Sporting Commission of the Automobile Club of France has begun its sittings for the discussion of the 1906 program. As this amounts to nothing less than a revolution in automobile events the commission finds it necessary to thoroughly thrash out the whole matter before coming to a final decision, and it is probable that it will take some weeks to elaborate a program which is intended to develop the automobile movement upon entirely new lines.

At the first meeting it was only possible to settle some questions of principle. One of these was the organizing of a race for pneumatic tires which has been approved of by the commission, but owing to the numerous side issues that are opened up by a contest of this kind the pros and cons will have to be carefully considered before deciding upon the way in which the race will be promoted. So far as can be ascertained at present the pneumatic tire race will be the only long distance speed contest organized in France during 1906. Apart from this the Automobile Club will have nothing to do with racing in any shape or form. It has completely disassociated itself from the Bennett cup contest which has also been dropped by the other countries, and at the meeting held this week the sporting commission decided that the forthcoming race for the Vanderbilt cup will be the only one in which France will be officially represented, that is to say, in future contests for the Vanderbilt cup French makers, if they compete at all, will do so upon their own initiative. Supposing the cup to be won by a French car in the coming race the Automobile Club of France would have been required, under the ordinary condition of things, to organize a race next year in this country, for if we remember rightly the deed of gift stipulated that the race was to be run off in America for the first two years, even if the cup were won by foreign built cars, but if the trophy is again carried off by a French car this year it will presumably mean that the race will again have to take place in the United States in 1906.

Although the deliberations of the Sporting Commission are kept secret, except so far as concerns the decisions arrived at, I have reason for believing that the majority of the members are not in favor of organizing a Grand Prix race which was to have taken the place of the Bennett Cup. So far there has been no decision upon this matter, but there seems to be a decided understanding to let the Grand Prix drop, at least for the coming year, the explanation being that motor car construction has so far reached a stage of perfection that nothing can be learned now from races. The true reason is probably to be found in the fact that French makers find the races are profiting their foreign competitors more than themselves, since foreign motor car builders are learning lessons from races which the French have profited from in the past, and the recent successes of the Italian cars are impressing upon manufacturers in this country the necessity of maintaining the statu quo so far as the industry is concerned. It remains to be seen whether the foreign makers will accept this condition of things, or whether the American, English and Italian trades will continue to try to develop the automobile from racing experience in their respective countries.

If French manufacturers consider that they have done as much as they can to perfect the motor car, and that there is nothing more to be gained mechanically from organizing long distance races, they think that something should be done to encourage manufacturers of pneumatic tires to keep pace with themselves in automobile development. The progress of construction in pneumatic tires has been far less noteworthy than in any other branch of the automobile industry, and where such a perishable material as rubber has to be used it is difficult to see how much more can be done in the way of increasing the durability of tires. The manufacturer of motor cars who suffers most from the frailty of the tire thinks that the tire manufacturer would be able to considerably improve his product if he were encouraged to do so by the competition and experience of racing events, and for this reason racing interest during 1906 is to be centered entirely in a race of tires, the expense of which will fall upon the shoulders of the tire manufacturers. Each firm will have to run a car of a stipulated weight and certain load and will be required to run it under conditions that will test the qualities of the tires and at the same time show up their defects. All sorts of proposals have been put forward for the carrying out of such a rach, such as restricting each maker to one set of covers and a limited number of air tubes, and compelling him to run his car at speeds that will put the greatest amount of work on the tires. But each of these proposals opens up difficulties and objections, so that on the whole it will be a no easy matter to fix upon a set of rules that will prove entirely satisfactory to all concerned.

It must be admittedthat the tire firms seem by no means so enthusiastic over the prospect of a race as they were when it was first mooted. It was obvious that they could hardly have refused this ordeal for fear that motor car users might have put an uncharitable construction upon their attitude, but at the same time they must feel they are being placed in an awkward position through being obliged to take part in races where the weakness of their tires will be revealed more strongly than their good qualities, and they could besides very well have done without this shifting of the heavy expense and responsibility of racing from the shoulders of the motor car manufacturers on to their own. After all, the tire race is not intended so much to advertise the manufacturer as to benefit users by compelling the tire firms to improve their products. These latter have for many years been reaping the profits of what is almost a monopoly, and they can very well afford now to do something to reduce as much as possible the cost and trouble incidental to the use of tires.

The Sporting Commission has also decided upon organizing a huge touring competition upon the lines suggested by the Marquis De Dion when the vehicles will be required to prove their endurance and reliability by travelling about 3,000 miles round Europe under certain stipulated conditions of load and speed. The touring tests carried out during the present year have given rise to a good deal of discussion as to the conditions under which they should be organized, for the methods of classification adopted have by no means given satisfaction to competitors who feel that the results are neither practical nor conclusive, and it will therefore be necessary for the great tour next year to fix upon a simple and effective classification which will be based probably upon the factors of speed and regularity.

Thomas to Offer $2,000 Trophy.

E. R. Thomas—not the New York banker, but the Buffalo manufacturer—means to give a cup—a cup of not less value than the Vanderbilt Cup. He witnessed Saturday's race, and it fired his blood. In fancy he saw the trophy leaving these shores, and he then and there determined to endeavor to bring it back again as the America Cup was brought back and kept here by American yachts.

Mr. Thomas believes it is in the American motor car to accomplish that very purpose. It is his wish to encourage that aim and to hasten its consummation. His cup will be offered with that end in view.

His plans are not yet settled, but soon will be. He has decided only that he will present the trophy, that the contests for it shall be open only to American cars, and that E. R. Thomas himself shall not be known in the matter, save by those who perchance may hold him in appreciative remembrance. He is not seeking glory or advertising or personal publicity of any kind.

His cup will not be styled the Thomas Cup. He inclines rather to Home Industry Trophy as the fitting title, but neither the title nor any other details are yet formulated. Mr. Thomas only wants Americans to bring back that Vanderbilt cup and to seek other cups emblematic of supremacy, and his offering is merely a spur to that ambition and a stimulant that will redound to the great good and credit of the American industry.

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Hemery the Victor; Lancia the Lion

How the Frenchman Quietly "Lifted the Cup" in 276 Minutes While the Cheers Were All for the Dashing Italian—Lancia Averages 73 Miles per hour for 198 Miles—Tracy Drives a Superb and Surprising Race—Crowd Too Great for Estimate.

Finish, Car	Driver.	1st lap. 28.3 m. M.S.	2d lap. 56.6 m. H.M.S.	3d lap. 84.9 m. H.M.S.	4th lap. 113.2 m. H.M.S.	5th lap. 141.5 m. H.M.S.	6th lap. 169.8 m. H.M.S.	7th lap. 198.1 m. H.M.S.	8th lap. 226.4 m. H.M.S.	9th lap. 254.7 m. H.M.S	10th lap. 283.0 m. H.M.S.
1—Darracq, 80 h. p.	Hemery	28:23	0:54:24	1:20:20	1:58:38	2:23:27	2:48:55	3:14:20	3:39:59	4:08:33	4:36.08
2—Panhard, 120 h. p.	Heath	28:02	0:55:03	1:21:56	1:48:51	2:15:21	2:41:54	3:10:59	3:44:31	4:11:41	4:39:40
3—Locomobile, 120 h. p.	Tracy	28:14	0:56:51	1:25:27	1:57:38	2:25:18	2:58:11	3:26:04	3:56:56	4:28:53	4:58:26
4—Fiat, 120 h. p.	Lancia	23:49	0:47:20	1:10:45	1:34:03	2:02:05	2:25:50	2:49:52	4:01:09	4:25:00	5:00:31
Renault, 90 h. p.	Szisz	24:55	0:49:24	1:14:45	1:53:27	2:22:45	2:56:09	3:24:46	3:53:41	4:34:07	Run'g
Fiat, 120 h. p.	Nazzaro	25:28	1:18:42	1:44:17	2:08:52	2:37:56	3:04:03	3:28:40	3:53:20	R'ng when st'd	
Fiat, 90 h. p.	Sartori	27:41	0:55:11	1:22:20	1:49:53	2:21:06	3:02:38	3:56:27	4:34:10	R'ng when st'd	
Mercedes, 120 h. p.	Warden	27:41	0:55:07	1:22:30	1:49:45	2:25:46	3:05:19	4:11:18	4:51:23	R'ng when st d	
De Dietrich, 130 h. p.	Duray	26:26	0:56:17	1:21:57	2:07:43	2:33:12	2:59:27	3:35:55	Running when stopped		
Fiat, 90 h. p.	Chevrolet	28:42	0:56:57	1:28:32	2:07:25	2:38:41	3:09:25	Broke an axle.			
Mercedes, 120 h. p.	Keene	27:21	0:54:24	1:23:05	1:54:10	2:20:53	Wheels smashed in crash with pole.				
Pope-Toledo, 60 h. p.	Dingley	29:44	1:00:55	3:42:33	4:21:35	4:57:20	Running when race stopped.				
White, 40 h. p.	White	51:31	1:36:23	2:18:54	3:09:14	Running when race stopped.					
Pope-Toledo, 90 h. p.	Lytle	29:15	2:00:17	2:35:49	3:15:52	Broke distance rod.					
Darracq, 80 h. p.	Wagner	24:56	0:49:49	1:30:38	Tire and engine trouble.						
Mercedes, 120 h. p.	Jenatzy	24:52	0:49:25	1:22:06	Cracked a cylinder.						
Christie, 60 h. p.	Christie	58:08	1:28:20	2:44:13	Wheels smashed in collision with Lancia.						
Fiat, 120 h. p.	Cedrino	25:36	0:53:54	Broke wrist pin at Bulls Head.							
Mercedes, 120 h. p.	Campbell	28:21	Broke gasolene tank.								

Distance of each lap, 28.3 miles. Distance of race, 283 miles.

It was a frantic waving of the green—a green flag—that signalled victory to August Hemery, the sour-visaged citizen of France, who, driving a Darracq car of 80 horsepower and weighing 2,060 pounds, won the Vanderbilt Cup on Saturday last, 14th inst.

It was a yellow flag, or rather a succession of yellow flags, that brought dismay to nearly all who finished after him, or would have finished after him.

The green flag was employed to convey to each contestant the message that he had completed the ten circuits of Long Island road that comprised the 283 miles that made up the course. The green had been waved to Hemery and to Heath, also representative of France, and, although the crowd knew full well that Lancia, of Italy, and Tracy, of America, were in full cry, the stupidity of a few Americans and the thoughtless inconsiderateness of thousands of others caused that flutter of yellow which officially spelled danger.

After the first two men had finished a youthful signalman two hundred yards removed from the tape held aloft his yellow flag. In quick succession every other signalman beyond him did likewise, and the spectators on that part of the course promptly swept aside the strand of heavy wire that had held them back and intruded on the road.

It was a scene that struck terror to the heart of the officials.

Those yellow flags signified that something had happened. Immediately yellow flags were ordered held aloft everywhere, while a courier on a motor bicycle was dispatched to learn what was the dreaded "something." The crowd opened for him, but he found no sign of disaster.

"What in —— are you holding up those flags for?" he demanded.

"To show that the race is over," blandly replied one of the country yokels who was holding a yellow flag.

"Put it down and keep it down. The race is not over until the last man has finished."

The yellow flags were lowered. But the courier had hardly returned and made his relieving report when a crowd of fifty men jumped the barrier near the approach to the tape and make a rush for that mark. Fifty more and a hundred more followed in their wake. The handful of uniformed rural policemen and the scores of special constables, dressed in their Sunday clothes and who were paid $3 each to meet just such an emergency, were helpless. Most of them stood like sticks.

The officials of the race threw themselves into the breach. They stopped the rush for a few minutes, if they did not entirely clear the course.

Lancia and Tracy were due at any moment. Lancia came first. He was signalled to stop before he reached the tape. He came almost to a halt and then slowly drove to the finish line, where he stopped and waited. It was known that he had been in collision with Christie, and word passed that he was entering a protest of some sort. The rumor spread like wildfire.

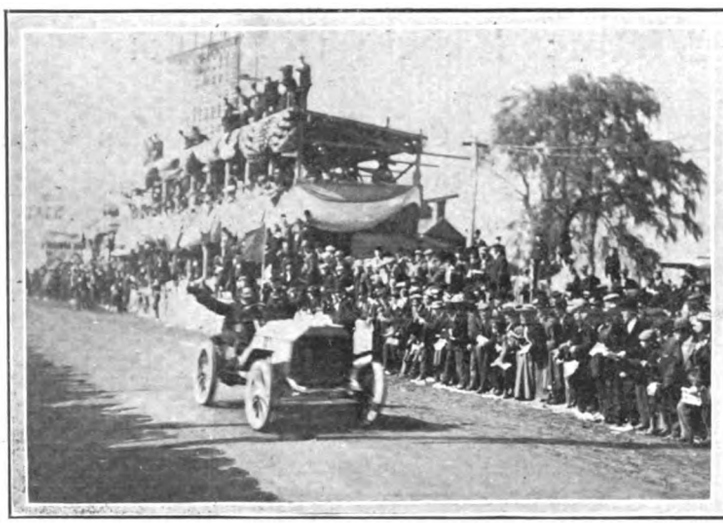
The crowd leaped the barriers, reporters leaped out of the press box. The road was black with scurrying humanity, all heading for Lancia. There was no stopping the mob this time. Threats and appeals were vain. The officials rushed for the telephone booth.

"Order the race stopped!" was the burden of their instruction.

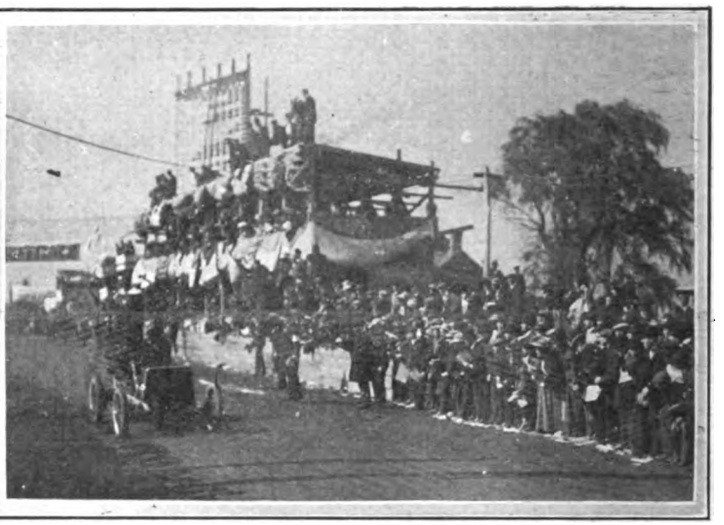
Eleven telephones at eleven corners of the course repeated the order. It was respected, but it brought dismay to five men who, though beaten, were yet intent on earning the credit of having completed the full distance.

Meanwhile a bugle call a half mile away, which was repeated by the bugler posted on the roof of the two story press stand, had given warning that Tracy was in sight. The crowd afar down the road could be seen opening to give him passage. The mob that had stormed the stands scattered tempor-

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HEATH FINISHING.



HEMERY FINISHING.

TIME BY LAPS AND AVERAGE SPEED.

Fin.	Driver.	1st Lap.	2d Lap.	3d Lap.	4th Lap.	5th Lap.	6th Lap.	7th Lap.	8th Lap.	9th Lap.	10th Lap.	Best Lap.	Avr. Lap.	Avr. m.p.h
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	
1	Hémery	28:23	26:01	25:56	38:18	24:49	25:28	25:25	25:39	32:34	27:35	24:49	27:44	61.43
2	Heath	28:02	27:01	26:53	26:55	26:30	26:33	29:05	33:32	27:10	26:59	26:30	27:58	60.75
3	Tracy	28:14	28:37	28:36	32:11	27:40	32:53	27:53	30:52	31:57	29:33	27:40	29:51	56.80
4	Lancia	23:49	23:31	23:25	23:18	28:02	23:45	24:02	71:17	23:51	35:31	23:18	30:03	56.59
	Szisz	24:55	24:29	25:21	38:42	29:18	33:24	28:37	28:55	40:26	.....	24:29	30:25	.....
	Nazzaro	25:28	53:14	25:35	24:35	29:04	26:07	24:37	34:40	.....	.....	24:35	29:09	.....
	Sartori	27:41	27:30	27:09	27:33	31:13	41:32	43:49	27:43	.....	.....	27:09	34:37	.....
	Warden	27:41	27:26	27:23	27:15	36:01	39:33	65:59	40:05	.....	.....	27:15	36:21	.....
	Duray	26:26	29:51	25:40	45:46	25:29	26:15	36:28	.....	.....	.....	25:29	30:50	.....
	Chevrolet	28:42	28:15	31:35	38:53	31:16	30:44	.....	.....	.....	.....	28:15	31:34	.....
	Keene	27:21	27:03	28:41	31:05	26:23	.....	.....	.....	.....	.....	26:23	28:07	.....
	Dingley	29:44	31:11	161:38	49:02	35:45	.....	.....	.....	.....	.....	29:44	59:28	.....
	White	51:31	44:52	42:31	50:20	.....	.....	.....	.....	.....	.....	42:31	47:19	.....
	Lytle	29:15	91:02	35:32	40:03	.....	.....	.....	.....	.....	.....	29:15	49:00	.....
	Wagner	24:56	24:43	40:39	.....	.....	.....	.....	.....	.....	.....	24:43	30:13	.....
	Jenatzy	24:52	24:33	32:41	.....	.....	.....	.....	.....	.....	.....	24:33	27:22	.....
	Christie	58:08	30:12	75:53	.....	.....	.....	.....	.....	.....	.....	30:12	54:44	.....
	Cedrino	25:36	28:18	.....	.....	.....	.....	.....	.....	.....	.....	25:36	26:57	.....
	Campbell	28:21	.....	.....	.....	.....	.....	.....	.....	.....	.....	28:21	28:21	.....

arily. Tracy thundered past and was swallowed in the human vortex that was swirling on the road as far as eyes could see.

Then the tens of thousands who had been held in at least partial restraint for five hours spread all over the highway. Touring cars, runabouts, bicycles, motor bicycles, even an occasional horsedrawn rig came from out of the fields and cross roads—men, women and vehicles seemed hopelessly intermingled. It was a scene that defies description. Viewed from aloft, it was in itself a sight worth going miles to see. On occasions large cities have held such surging mobs, but seldom, indeed, is it given man to witness such a picture on the quiet highways of a pastoral country. It was an hour before a semblance of order came out of the chaos.

Long Island may have had some great days, but in the memory of man there was none so great as this, Saturday, October 14, 1905.

Though Hemery won and the Vanderbilt Cup and the honors remain with France, the glory of the race belongs to Vincenzo Lancia, of the Italian team.

Lancia was the favorite before the race, and long before it was half over he proved himself worthy of the favoritism. He fairly drove himself into the affection of every man, woman and child on the course. He had the race won "hands down" when fate in the form of the cranky Christie car crossed his path, and, so to speak, cut him down and was cut down at the same moment. Christie, who was hopelessly out of the contest even before he started and who, so far as he himself and the country he so poorly represented were concerned, would better have been off the road than on it, was spilled with his mechanic and stopped right there.

Lancia, not so badly damaged, was able to effect repairs, but in effecting them he lost his long lead, and although he drove like a demon, was not able to regain it. But his demeanor and his conduct after all was over served only to add to his popularity. He accepted defeat with rare good sportsmanship and proved himself as courteous and considerate as he is skilful and courageous. He is big, broad and swarthy, with a full face, care free. He might readily pass as basso profundo of grand opera, save that he does not reflect the self-importance of that ilk. He has a pair of laughing black eyes, a merry smile that lights up his entire countenance and an easy, debonair, devil-may-care air that reflects a light heart and an ability to toss trouble. His driving accorded with his appearance. This country never had witnessed anything like it.

It was known that the F. I. A. T. representatives in America had left nothing undone that would contribute to the success of the dashing driver and his mates. They even had had erected a private telephone line around the course to better keep in touch with their men. So thorough were their arrangements that they had in readiness spare radiators on which the competitors' numbers were already painted. And then that Christie car, doubted by every American save those officials whose favor had kissed it into the contest, should come along and prove the undoing of all, and most of all, of Lancia! It was almost the irony of fate.

The start of the race was quite like the starts of other races of the sort.

Before the purple of the dawn that followed a glorious moonlit night had entirely lifted, eighteen of the twenty cars that had engaged for the long struggle over 283 miles of undulating and oil soaked Long Island road were, like huge, impatient beasts, "straining at their bonds" at the starting point at Mineola. Two unpainted pine structures, one the grandstand, peopled largely by wealth and fashion unaccustomed to such early hours, the other the double decked official stand, in which are housed timers, scorers, telephone attendants, reporters, and atop of which is a huge blackboard, a bugler in soldier clothes and a halfscore of photographers. Both stands are festooned with the national colors of America, of France, of Germany and of Italy, the four nations about to contend for supremacy and the Vanderbilt Cup.

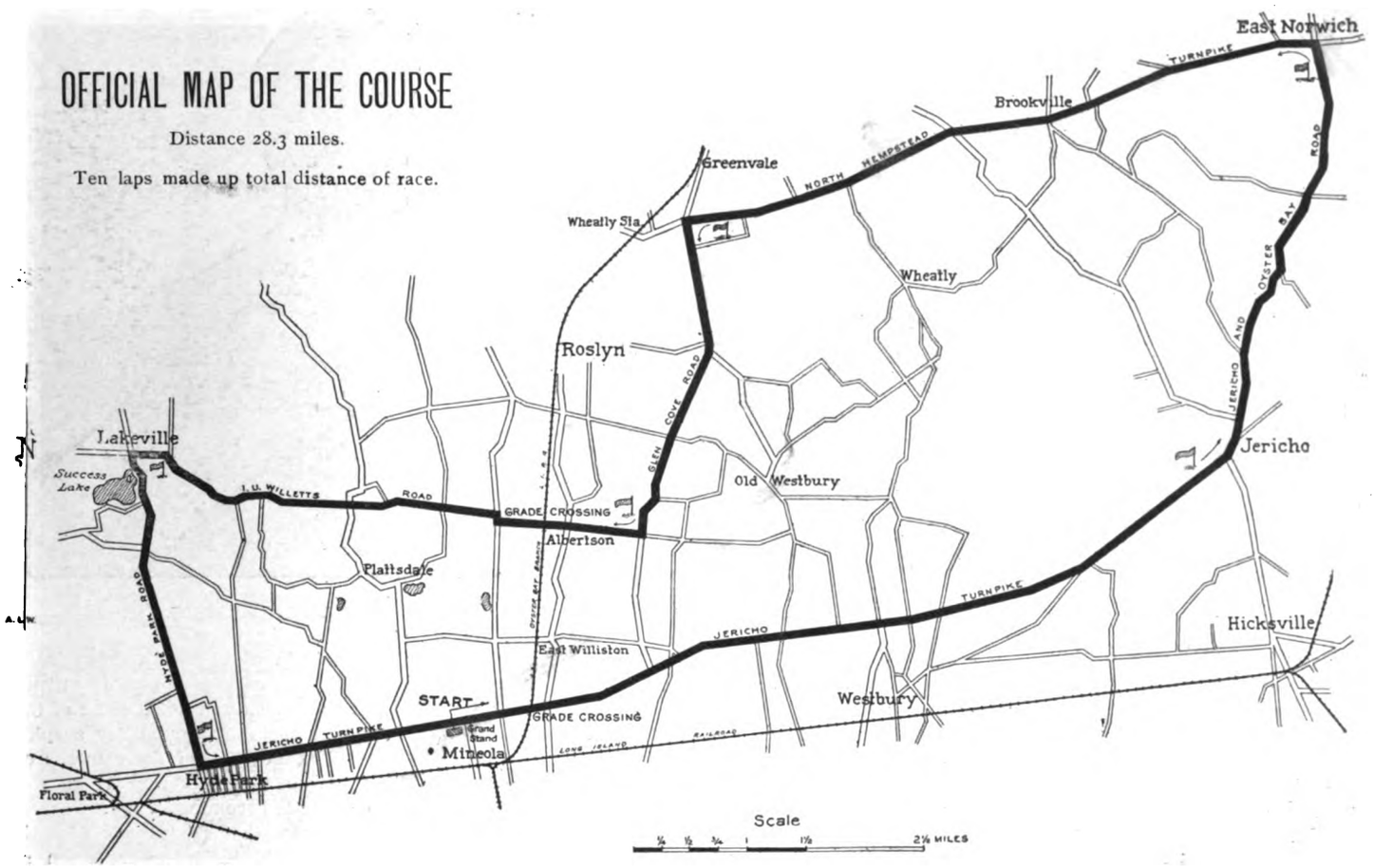
The near approach of 6 o'clock causes a hurry and a scurry.

An official approaches the telephone booth.

"How's the fog in Guinea Woods?" he inquires.

A man at one of the many telephones repeats the inquiry. The answer is reassuring. It may be that the official breathed easier. Guinea Woods stands for a dark, deserted wooded stretch of country on the Glen Cove road near Albertson. It is not a pleasant place

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in which to encounter a fog at any time. The man with the big megaphone shouts far-carried messages designed to clear the course of men and cars that have no business there. Other men with broad bands of ribbon on their arms—the officials—and others with badges on their chests and obviously countrymen—the special constables, seek also to relieve the congestion. They have not entirely succeeded, when a man in what is plainly a brand new suit of russet leather—the starter—and another in corduroy—the clerk—become all animation. There is a plentitude of shouted orders. Then a hooded individual with a high cheeked face, like a Mongolian, and a funny corkscrew beard of auburn hue, who had been walking around it, eyeing it critically, climbs into the big white car bearing the No. 1. He is Jenatzy, the Belgian, representing Germany, who is to drive the German car owned and nominated by an American of wealth—Robert Graves. Graves is on the spot, and exchanges a few words with Jenatzy, as does W. K. Vanderbilt, Jr., the donor of the cup and the referee of the race. Vanderbilt is wearing his familiar black satin coat, and beneath it a gray sweater, the better to keep out the early morning chill.

The starter tolls off the minutes, then the seconds:

"Three! Two! One!"—Mrs. Vanderbilt, in a box overlooking the scene, animatedly beats time in unison with the starter's count—then a pump handle motion of the arm, a shrieked "Go!", a big puff of smoke, a fairly hearty cheer and Jenatzy slips easily away and is lost in the distance even before the sixty seconds have elapsed when "Go" is shouted into the ear of Duray in the big blue De Dietrich. Dingley, attired in khaki and driving the "little" Pope-Toledo—the 50 horsepower car that won the American eliminating trial—is No. 3. A really hearty cheer rewards him as he starts. It was his only cheer. Silence was his portion when next he passed.

No. 4—ah! Lancia, the dashing, smiling Lancia. If he is concerned or nervous ever so slightly there is no sign of it. There is no smoke pouring from his car. It is thundering and belching fire, but the flame is blue and bright, but, strange to say, one tongue of it actually is licking his left front tire. It seems odd that this should be the case, but Lancia, he must know and must have weighed the chances. Keene, Wagner, Tracy—looking like a wax figure, so pale is he, and with an orange hued kerchief about his neck—Tracy who had cracked a cylinder only the day before and who had worked the livelong night that he might be here—Nazzaro, Warden—another victim of cracked cylinders—Szisz, and then No. 11—Christie—but Christie is missing, yet scarcely is missed so quickly do the minutes fly.

Cedrino, another swarthy citizen of Italy, he is there; so is his wife. She is nervous, very. She pinches her lower lip. She makes to speak to her husband, but he is off and away before she can edge close to him. Campbell, with an X on his radiator to dodge the superstition saturated No. 13—Heath, who waves a goodby—Lytle, Chevrolet—then another break. No. 17, Clarence Grey Dismore's German entry, which failed to reach these shores—Hemery, White, Sartori—they are all away.

The spectators settle back. Some of the officials speak in half whispers of Christie's absentation. He has sent no message of explanation. None knows where he is—not even the bearded "Jimmy" Breeze, who is supposed to own the Christie car and in whose name it was nominated. Breese is on the spot, wearing a badge and a buttonaire and other indications that he had surveyed himself full in the mirror despite the early morning hour. There is talk that eleventh hour family objections had prevailed, and that Christie has flunked. There also are some stronger expressions—much stronger ones. The man puts his megaphone to his lips, and Christie is forgotten.

"No. 1 has passed Willetts avenue," he announces.

It is the first of very many messages that the splendid telephone service delivered and that kept the spectators so well informed throughout the whole forenoon. It was a busy forenoon for the megaphone man. He earned every cent of his fee.

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First—AUGUST HEMERY, FRANCE.



Second—GEORGE HEATH, FRANCE.

The sun has dissipated the slight morning mist. The sky is fleckless blue. It is a glorious day—one of those rare days in October. Already is the chill of early morning well removed. "Society," in the cars and the stand, has removed or is removing her expensive furs or other wraps; it reveals equally expensive morning toilets. Common democracy, not in cars and not on the stand, is removing top coats and sweaters. . . . The bugle blows a-down the road. The call is echoed by the bugle outlined against the sky atop the press stand. . . . "Car coming!" . . . It is Jenatzy. He tears past at a terrific pace. . . . Again the bugle. Again the echo. . . . A wave of comment sweeps the crowd. . . . It is No. 4. No. 4 is Lancia. Already he has passed Duray and Dingley, two of the three men who were in front of him. He has made big gains in the first twenty-eight miles. . . . He hurls by like a thunderbolt. He knows that he has done good work, for his face is wreathed in smiles. The crowd, too, knows it without awaiting the megaphone announcement. It cheers—cheers heartily. Lancia hears it. His smile appears to widen and he waves his hand. The megaphone gives out that Lancia's time for the 28.3 miles is 23:49, and again that wave of admiration stirs the multitude. It is sustained speed such as Americans have never witnessed since their nation first established a highway; and these roads are not the best that America now holds. Seventy-one miles per hour! It is speed that staggers belief. . . . Keene thunders by. . . . Mrs. Vanderbilt leans far over the rail and follows him with her eyes until he is a mere speck in the distance. . . . Keene is of the "Vanderbilt set," you know. . . . But the little lady in white with a green feather stuck in her hat assumes so many attitudes during the forenoon and holds some of them so long that there is ground for suspicion that she likes the click of the cameras centred on her, or poses merely because she fancies posing is becoming. . . .

At 6:38 comes the cry "Here's Christie!" and, sure enough, it is the forgotten and derelict American. His low hung car is sounding its deep, sonorous rattatoo, but there are false notes—missed notes—discernible. He approaches slowly and makes as if to stop. "Jimmy" Breese is all excitement. Referee Vanderbilt seems to share it. Before Christie halts, and although a moving start is contrary to the rules, the referee runs out into the centre of the road and waves him on. Christie goes; but not fast enough to excite comment and with not one



THE SCORE BOARD.

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Third—JOSEPH TRACY, AMERICA.



Fourth—VINCENZO LANCIA, ITALY.

hand of encouragement. His engine appears to labor. There is a report that it also had suffered in the epidemic of cracked cylinders. . . . It is nearly an hour before the Breese with whiskers sets eyes on his car again. Few others take notice of its passing.

* * * * *

The story of the first passing of the cars as seen from the official stand is practically the story of each successive period marked by that point.

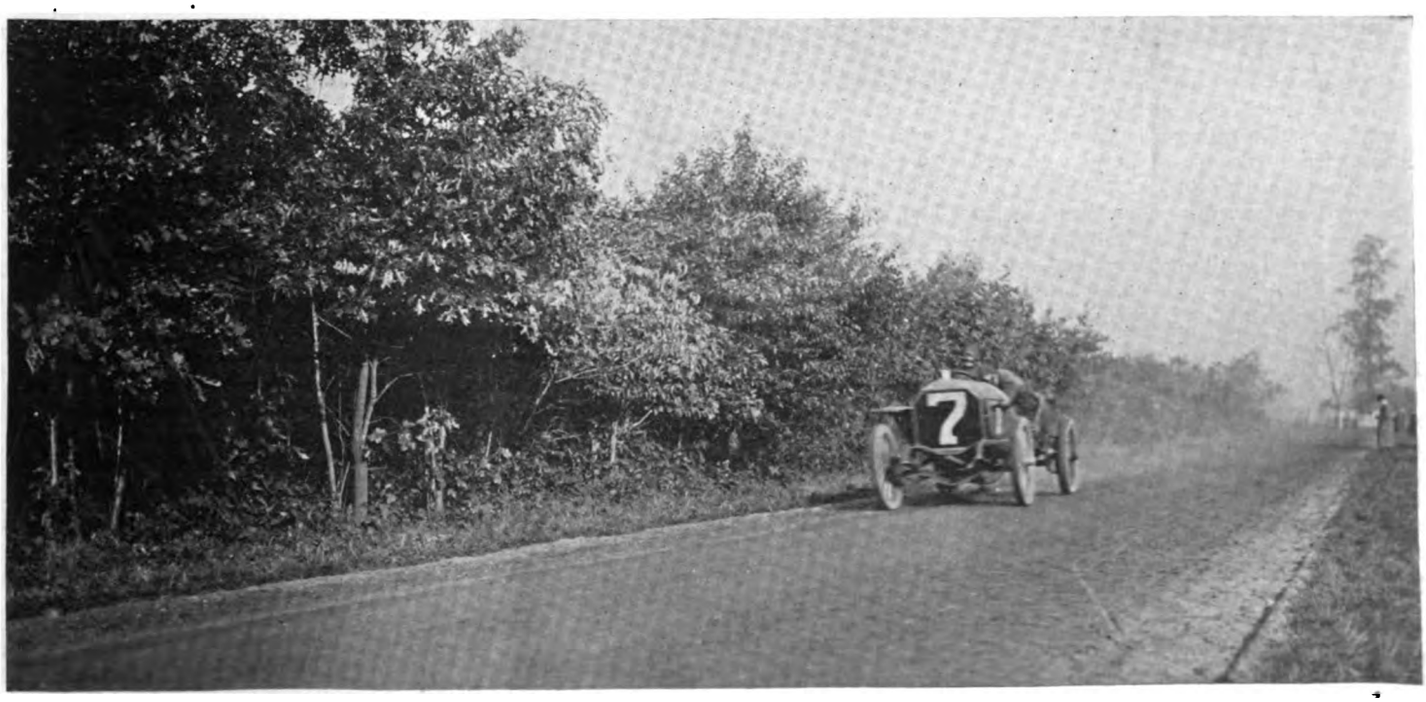
On the second lap Jenatzy was still in front, but Lancia was pulling him down rapidly. The Italian had gained 63 seconds on the German in the first lap, and he gained 62 seconds on the next round, although Jenatzy had quickened his pace some 20 seconds. Lancia did the two rounds in 23:49 and 23:31, respectively; Jenatzy in 24:52 and 24:33. Lancia had come to America with a great reputation. He was living up to it, and the spectators were not slow to realize the fact. They warmed up to him quickly, and at the end of another lap they had eyes and interest only for him. All others were practically lost sight of.

It was "all Lancia."

He passed Jenatzy on the third approach to Bull's Head—which is the right angled turn near Wheatley Station—but he never let up. He kept crowding the pace, which reached its climax on the fourth round, which was negotiated in 23:18, or seventy-three miles an hour. That was the fastest lap of the race, and of the nineteen contenders Lancia alone got under 24 minutes; and he did so no less than six times. Szisz, in the beetle shaped Renault, did 24:29, which was the next best performance. For seven laps, or 198 miles, when accident befell him, the Italian averaged 69.9 miles an hour.

Is it any wonder that, though he failed to lift the cup, his glory is so great?

Apart from the hurricane speed that was so terrific as to stagger comprehension, the grandstand received its first real thrill on the second lap. An instant before Wagner (Darracq), moving at a pace of sixty-eight miles



TRACY (LOCOMOBILE) CROWDING "ALL ON" ON A STRAIGHT STRETCH OF THE GLEN COVE ROAD.

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an hour, crossed the line, his right rear tire exploded with a tremendous report. Whole sections of his inner tube flew high into the air and were picked up fifty yards apart. The explosion brought the dense and curious crowd beyond the barrier onto the road, and the officials watching his flight shuddered at the prospect. But Wagner was equal to the emergency. He wavered from his course scarcely a hair's breadth, the crowd parted, and when he had slackened pace he threw up one hand as if to let the officials know that he had full control of the car and that all was well.

"Fine work, that," commented one of them. And it was fine work.

It was but a few minutes later that the officials had a scare of which the spectators knew nothing. Word came over the telephone of an accident on the Willetts road. None knew what it was, and no particulars were forthcoming. The operator was seeking information in rather a loud voice.

"Easy, there, easy—speak softly," cautioned the alert associate referee, A. R. Pardington.

His caution proved wise on an occasion when rumors were travelling fast and assuming exaggerated form in no time at all. Word soon came that the accident, whatever it was, had been righted.

It was a bad day for the American team. Christie had started a full lap behind and was not a serious factor; White, on the first round, had "run into the barn at Bull's Head"—the report became frequent during the forenoon—for water or something else and was also out of the reckoning; Lytle had smashed into a big dog near Mineola, on the second round, and buckled his distance rod and stood no show, and on the third round there remained only Tracy, in the Locomobile, and Dingley, in the "little" Pope-Toledo, as it was generally termed.

Word came on the third round that they had passed Hyde Park together, and the American public then saw a running fight between their sole remaining "hopes." After a fashion, they "had it out" all the way up the Jericho turnpike. Passing the grandstand Dingley was leading by thirty yards. Tracy seemed cautious about attempting to pass, and they passed out of sight in this order at a pace which all could see was not comparable with that of the foreigners. It was nearly two hours before Dingley was seen again. An inlet valve broke and, dropping into the cylinder, played havoc with it. He was announced as out of the race, but by heroic work a repair was effected and Dingley restarted with the hope of finishing "no matter how." He kept going until the contest was ordered stopped.

After striking the dog at Mineola Lytle discovered the buckled distance rod, but believing it to be strong enough to hold together he proceeded slowly on his low gear. The accident had thrown his wheels out of whack. In the Guinea Woods, on the Glen Cove road, one of them began acting so dangerously that his chauffeur, Tattersall, was dispatched afoot to find a substitute.

This gave rise to a series of the most conflicting rumors it is possible to conceive. Without awaiting the return of Tattersall Lytle elected to "take chances."

"Lytle has dropped his mechanic and is driving alone," was the first report that came over the telephone.

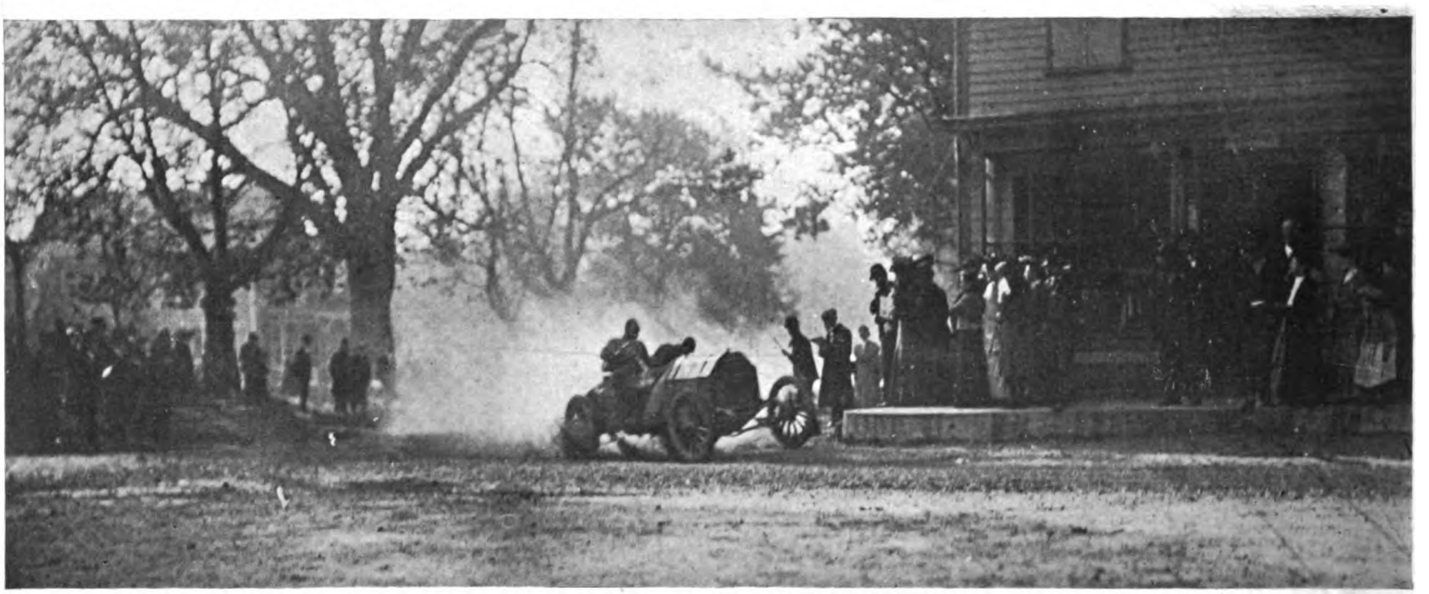
"Lytle does not know where he lost his man, but says the fall won't hurt him, as he is a football player." "Lytle is lost; his man is driving the car." "Lytle's man landed on his head in the ditch." "Lytle's man is reported lying in a ditch in the Guinea Woods." "Lytle's chauffeur broke his neck."

These and other alarming reports of the sort were received in response to every effort to obtain definite information. Finally Referee Vanderbilt and a physician hurried away in Mr. Vanderbilt's own racing car. They were absent some time, but when they returned "nobody hurt" was announced. All the while Tattersall, about whose supposed death all were so greatly concerned, was footing it lackadaisically along the roadside.

Lytle picked up another man, and after changing wheels covered one fairly fast lap and a rather slow one, each time passing the stand with a plume of steam flying from his radiator chimney and with water spouting from it like a fountain, his chauffeur making frantic efforts to protect himself from the hot fluid that was dashed into his face at every pound.

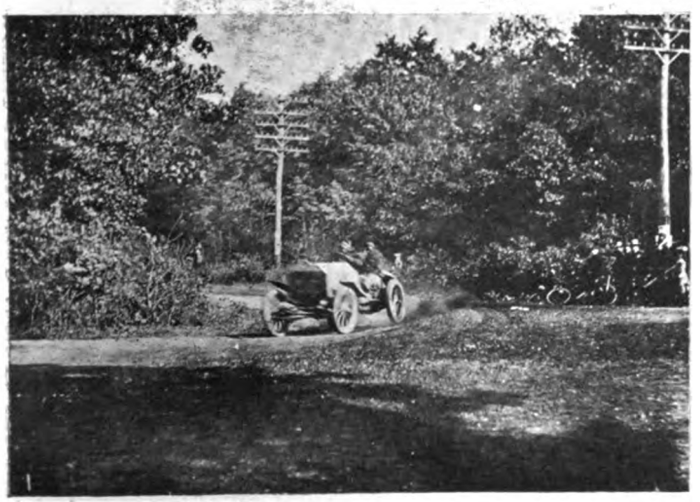
The behavior of White, the only American to suffer much tire trouble—he shed two tires—was past understanding. He made a holiday of the race. He went "into the barn at Bull's Head" regularly each lap—apparently for water, but as the door of the barn was closed in the faces of the curious none can say with certainty that these excursions were for water. At about the time he had been forgotten would come the report, "White is going again"; then he would alternately speed and loiter over the course, only to again disappear in the barn. Although about 140 miles behind the leader, he was still meandering toward the barn when the crowd stampeded and forced the stoppage of the race. His performance was one of the bitterest disappointments of the day.

There was once that White varied the monotony of "going into the barn at Bull's Head." It was on his fourth lap—it is necessary to emphasize the "his"—that for a change he literally "took to the woods." In rounding the Guinea Woods turn on the Glen Cove road he miscalculated his speed and to avoid striking a telegraph pole he ran full into the bushes and undergrowth and then emerged on the other side of the pole. White's ill luck pursued him every foot of

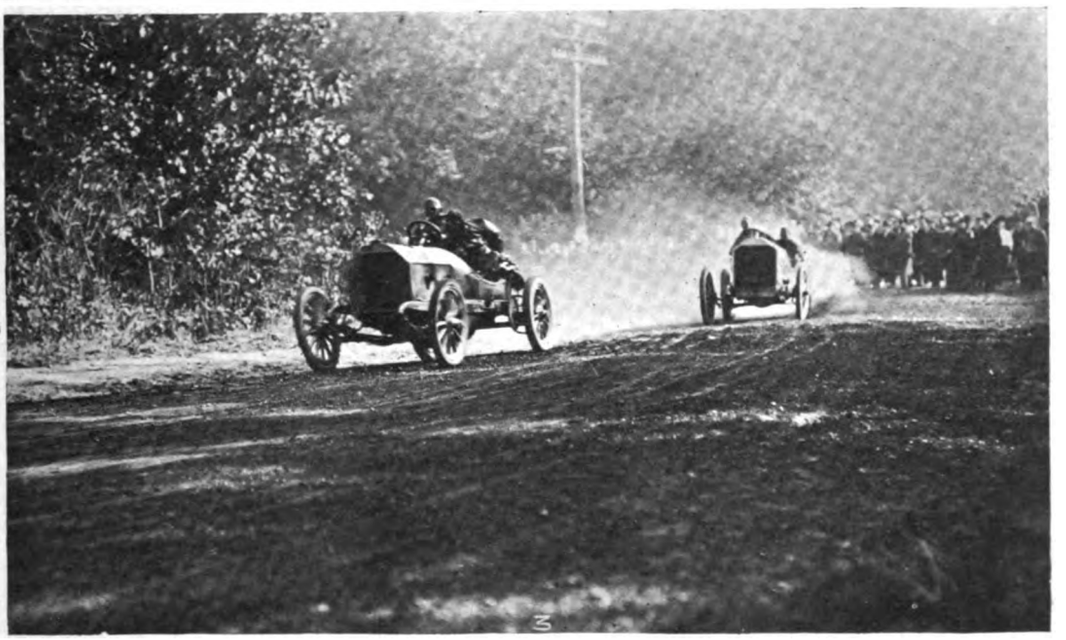


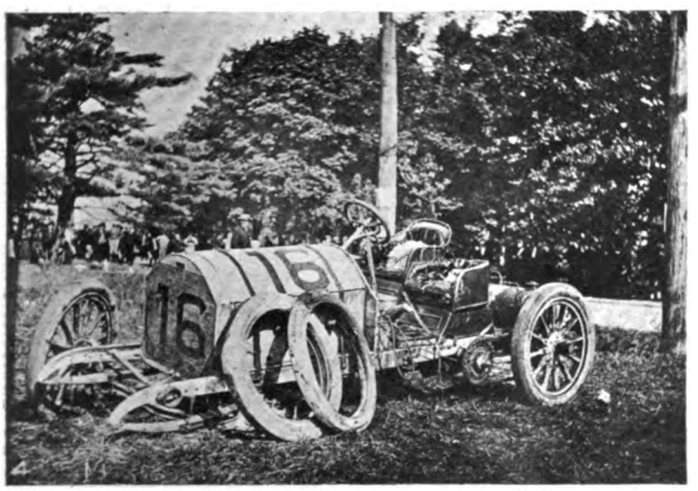
LANCIA MAKING UP LOST TIME—A STRIKING ILLUSTRATION OF HIS DARING AND OF THE HEEDLESSNESS OF SPECTATORS.

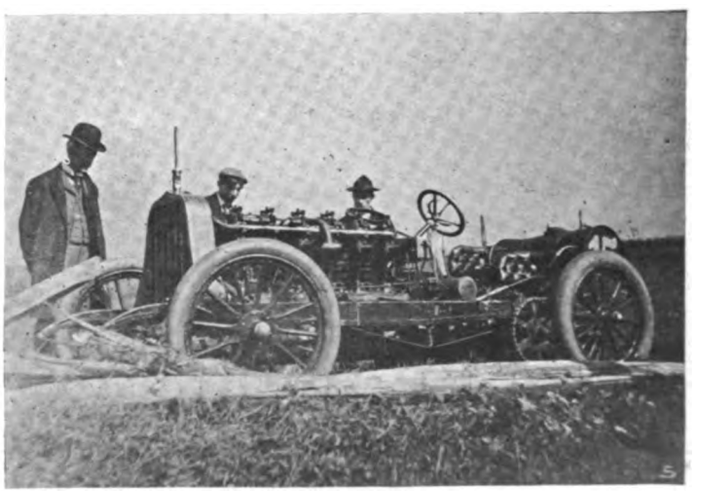
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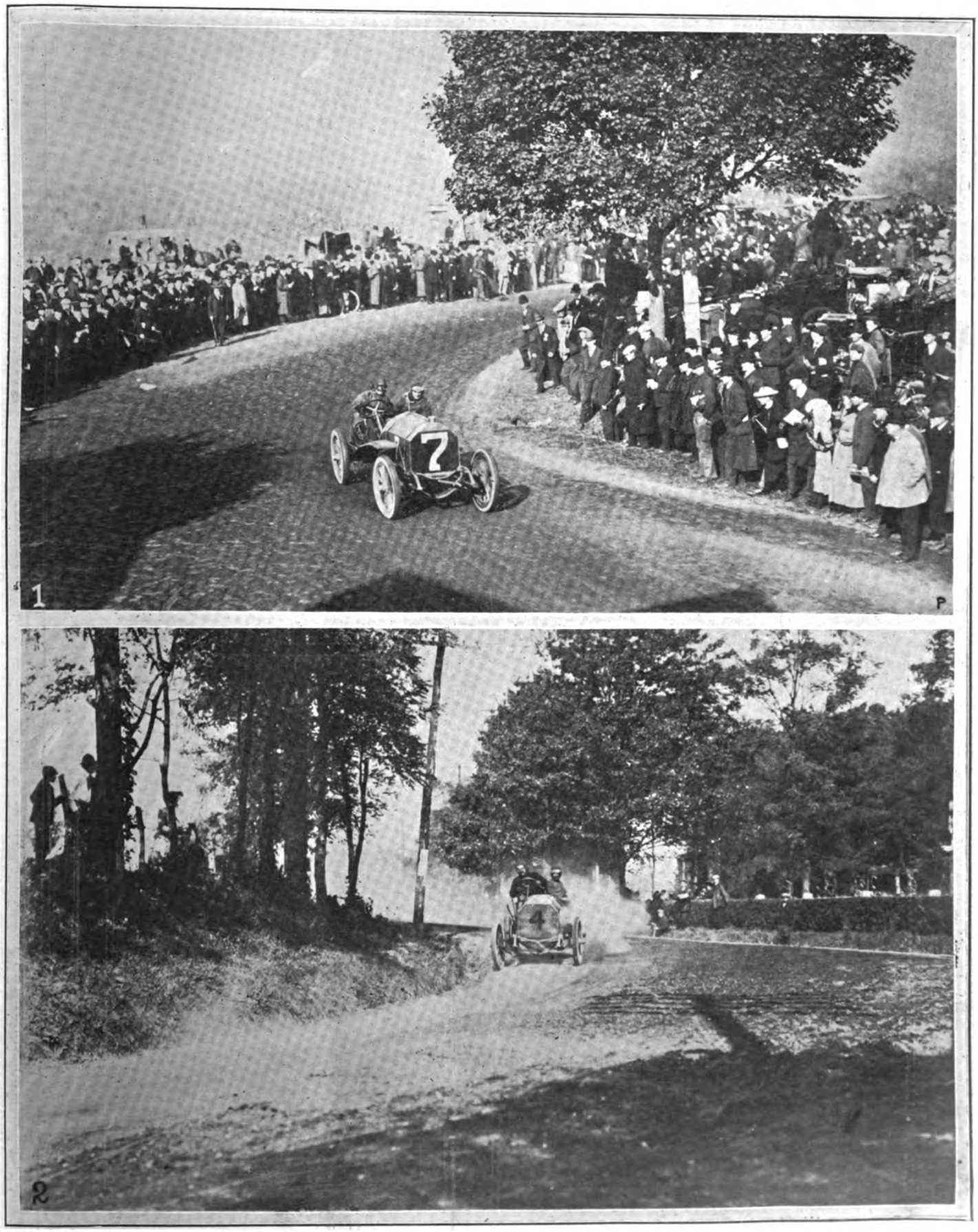
THE QUICK—1. HEATH IN THE GUINEA WOODS. 2. SARTORI ON THE GLEN COVE ROAD. 3. WARDEN PASSES DURAY ON THE INSIDE AT THE GUINEA WOODS TURN. **THE DEAD**—4. CHEVROLET'S DISABLED F. I. A. T. AT ALBERTSON. 5. LYTLE'S POPE-TOLEDO AFTER CRASHING INTO THE FENCE NEAR LAKEVILLE.

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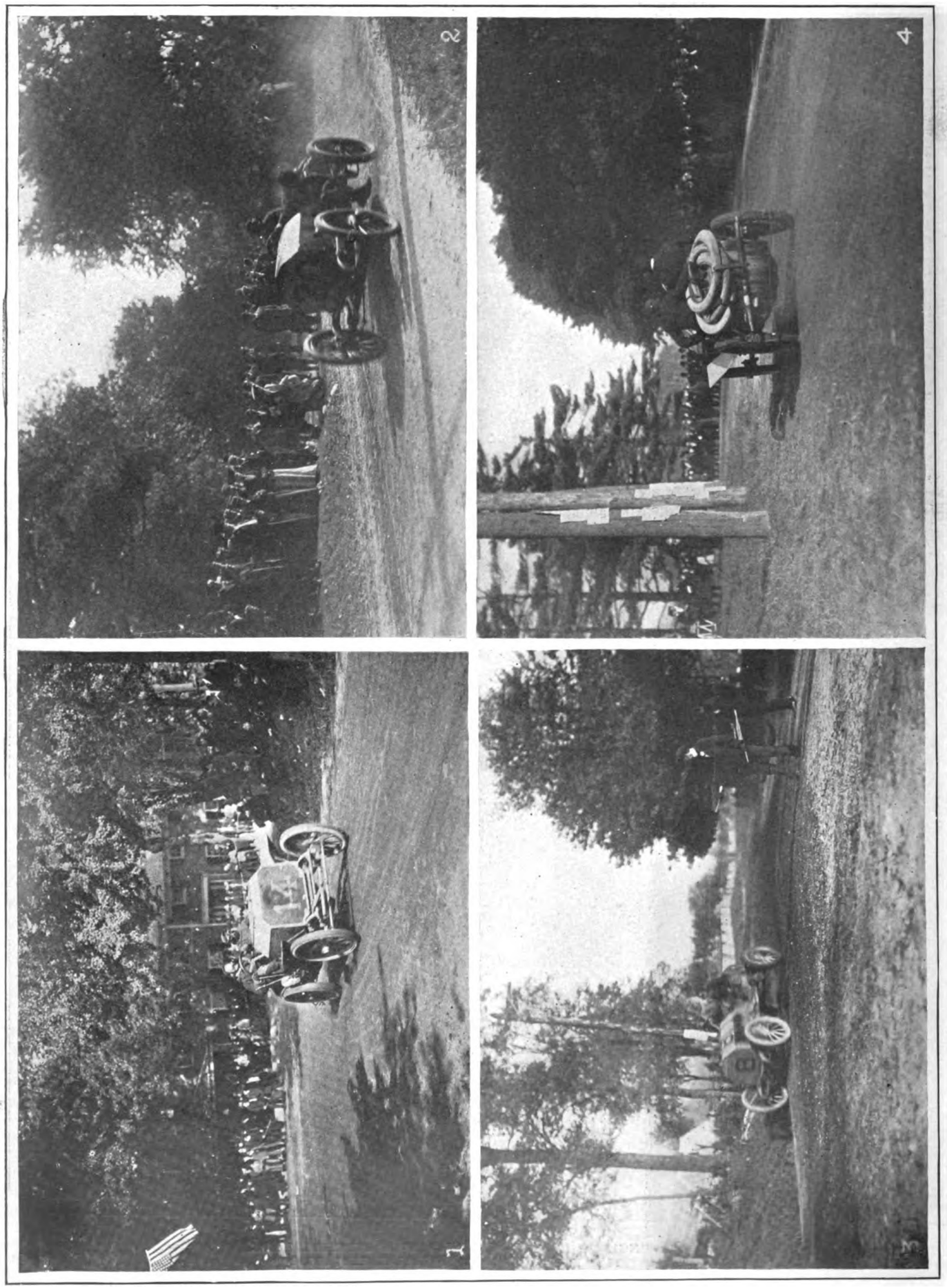
1. TRACY NEGOTIATING THE "HAIRPIN" TURN AT LAKEVILLE.
2. LYTLE LITERALLY BOILING PAST THE VANDERBILT ESTATE.
3. LYTLE IN TROUBLE.
4. TRACY "FILLING UP" AT HIS SUCCESS LAKE SUPPLY STATION.

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1. TRACY SWINGING INTO THE JERICHO ROAD AT HYDE PARK.
2. LANCIA "CUTTING A CORNER" TO A HAIR'S BREADTH.

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1. HEATH ROUNDING THE LAKEVILLE TURN.
2. SARTORI'S CHAUFFEUR TAKING THINGS EASY.
3. NAZZARO CUTTING A CORNER CLOSELY.
4. HEATH ON THE S TURN AT ALBERTSON AND SHOWING POLE AS "BARKED" BY KEENE.

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TRACY FINISHING, WITH LANCIA LOOKING ON.

the way. On one of his very many stoppages he borrowed a bicycle to go to the famous barn for some needed part, and en route even the chain of the bicycle broke.

Christie, the fifth member of the American team, stood no earthly show at any stage. Its performance after the substitution of his cranky car after its failure in the elimination trials amply justified all the hard things that were said of the car and of the Cup Commissioners, who threw out the Thomas racer that the Christie might compete in the cup race itself. Christie's family strenuously objected to his driving, he himself tried to beg off, and he even developed rheumatism and carried his arm in a sling. At the eleventh hour a cylinder is supposed to have cracked, and it would have redounded to the credit of America, if not to himself, had he never repaired it. Before he and Lancia collided he had torn off a tire, of course, and at Bull's Head he stalled his engine. The crowd there gave him a hand, and, after he had been pushed off, the car waltzed all over the road. It would have been a mercy had he and White run into some barn and locked the door so tightly that they could not get out again that day.

Lytle's damaged distance rod held together until on the fifth round, when, with the strained steering socket, it gave way near Lakeville. He, of course, lost control of the car, and, with few to see it, it spectacularly ran off the road, demolished a rail fence and charged into a potato patch. There it halted, right side up and with no injury done save to the fence.

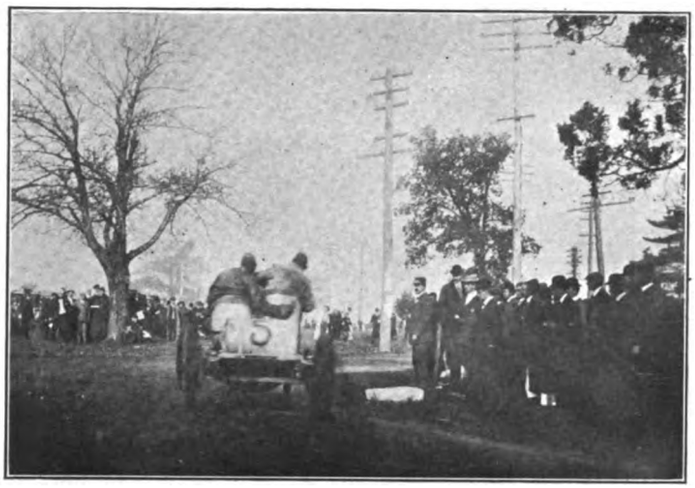
Tracy, the one remaining hope of America, ran like a clock. He stopped only to replenish supplies and to scrape a slippery clutch. Otherwise, as the figures by laps serve to show, he ran steadily and surely, if not spectacularly and meteorically. The statistics show that the men who finished one, two, three were the steady goers. Tracy finished third by virtue of his steadiness. Few of those who saw him perform and place the Stars and Stripes higher even than most men had dared hope knew the odds under which he had labored. The day before he had cracked a cylinder and done some other damage. Word was quickly sent to the Locomobile factory at Bridgeport. There was no train due, so the needed parts were loaded into a Locomobile touring car and rushed to Long Island. It was midnight before the damage was remedied; it was after midnight before the car was weighed in; it was 4 o'clock Saturday morning before the engine was turned over. It worked at the first turn, but there was no chance for "tuning up"—no chance for a "try out." It all adds to the wonder that Tracy and his car performed so grandly, so greatly to the glory of America. After the fourth lap his countrymen awoke to the merit of the splendid work he was doing, and thereafter cheered him heartily.



WHITE STOPS TO TINKER.

If the American team was all but eliminated, so, too, was the Italian team, while the German representation was completely wiped out. True, Nazzaro and Sartori, of Italy, and Warden, for, if not of Germany, were still circling the course when the race was ordered stopped, but so, too, were White and Dingley of America, but all were from twenty-eight to fifty or more miles behind the leaders and stood no earthly show. "Herr" Campbell, who fell heir to No. 13

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KEENE A MOMENT BEFORE CRASHING INTO THE TELEGRAPH POLE.



PUSHING KEENE'S CAR OUT OF THE WAY.

after "Herr" Keene had wailed so loudly that it was removed from him, was the very first man to be bowled out. As salve for his superstitiousness Campbell was permitted to display an X instead of the figure 13, but it did not save him. On the second round a hole was punched in his gasolene tank, and that was the end of him.

On the third lap Jenatzy, chief hope of the German team, and Warden were reported stopped at Bull's Head. Both got going again, but on the very next lap, at the same place, Jenatzy went down and out with a cracked cylinder. Warden then had more than his share of tire trouble. One tire went flat and compelled a stop at Lakeville. Then another flew off in the Guinea Woods, and the wealthy American who was playing German for the day went on without it. It was replaced, but another one was lost at Hyde Park, and Warden limped by the grandstand far to the side of the road, bumping on one rim. Keene, though successful in escaping No. 13, did not escape accident, and came close to serious injury. He was performing well, when on the sixth lap he sought to negotiate the "S" turn at Albertson. There are several so-called "S" turns, but this one is rightly so styled. "Ticklish" enough at best, there are three telegraph poles set not fifty feet apart in the very belly of the "S." The men swung to the right entering the "S" and to the left in leaving it. The three poles are all on the left side of the road.

When Keene, too confident or slightly misjudging his speed, swung to the right, his car skidded straight for the first pole. He saw his danger and quickly shifted his steering wheel. His chauffeur, nearest the pole, saw the danger, too, and, half rising, leaned far over Keene to avoid the impact. He avoided it, but the left front wheel of the car struck the pole with such force that the chauffeur was pitched headlong out of it, and, strangely enough, fell directly in front of the right rear wheel, which partly passed over his chest. The front wheel was wrecked and the axle bent, but Keene kept his seat. The chauffeur was stunned and lay where he fell, partly under the car, but happily he was not seriously injured. Heath was trailing Keene, and, seeing the accident, brought up quickly to avoid running over the prostrate man. He stopped on his high gear, which stalled his engine and lost him some valuable moments before he could again get going.

Heath, the American representing France, was afterward credited with great gallantry and self-sacrifice—even at the cost of the trophy—in stopping to lend assistance to the American thus disabled while in the service of Germany, but he was quick to repudiate the credit.

"I stopped solely to avoid running over Mr. Keene's chauffeur," a Motor World man heard him disclaim. "There were two hundred other men on the spot to render assistance, if assistance was needed."

After his car had been pushed off the road Keene, wearing a rather shabby gray overcoat, made his way to the grandstand, where he remained until the end of the race. He told his story to the Vanderbilts and the Belmonts and to a perfectly lovely man wearing an English hunting costume topped by a pancake hat with a green ribbon band. He remained standing directly under the Vanderbilt box for an hour or so. Several times he wiped his watery eyes with a handkerchief. Some of those who fancy that all is tears that flows from the eye saw that Keene was weeping for disappointment.

Of the Italians, Cedrino was the first to be bowled out. A broken wristpin at the Bull's



KEENE WALKING TO THE GRANDSTAND AFTER HIS ACCIDENT.

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DURAY SWEEPING 'ROUND THE BULL'S HEAD CURVE.

Head turn, on the third lap, gave him his quietus. Chevrolet ran with steadiness, if not with dash, until on the seventh round, when, swinging round the "S" turn at Albertson, his left front wheel collapsed gradually under the strain. He must have felt something wrong, for with skill and dexterity that brought a cheer from the crowd he steered clear of the dangerous poles and brought up in the field, where the car came to earth with comparative gentleness. While Sartori was pegging away with a steadiness that surprised his friends, Nazzaro was reported down with a puncture at Lakeville, on the second round, and the time of his eighth lap, 34:40, bears witness of mischief on that circuit.

But the story of the Italian team and of the race is written around Lancia.

Although his fifth lap was nearly five minutes slower than his preceding circuits, when Lancia passed the stand his smile had spread into a broad grin. He was going the greatest kind of great guns, but the grin was unmistakable. He had cause for it. He was not only in front, but in point of time he was thirteen minutes ahead of the next fastest man—Heath. On the next lap the thirteen minutes had been lengthened to sixteen, and on the seventh round, when Heath stopped for supplies, Lancia increased his lead to twenty-one minutes—practically a full lap. It all seemed over but the shouting. Apparently Lancia himself and his advisers thought so, too. On the next lap, the eighth, he stopped at the Michelin tire platform on the Willett's road near Albertson to take on supplies and to make assurance sure, to change his tires. The work had been completed and Lancia was making ready to start when there came the warning cry, "Car coming!" Lancia had already turned on his power and under impetus the car shot forward from the platform at the right hand side of the road. As the forward wheels of his Fiat struck the oiled surface Lancia gave a quick glance over his left shoulder. Christie was at that instant less than fifty feet behind the Italian. He had shut off his power and applied his brake, but the impetus was too great to be checked instantly.

Lancia had thrown over for full speed, evidently hoping to draw away from the Christie car in time. Whether his action was due to a miscalculation of time and distance, or whether, as many of the spectators declared afterward, he was displaying characteristic recklessness, is not clear. The Christie car "side swiped" the Fiat, crushing both the forward and rear wheels of the American machine, which slid for a distance of 200 feet, and then making a complete turn struck the soft embankment at the left of the course with tremendous force. Both Mr. Christie and Nicholas Leightner, his mechanician, were shot from the machine as from a catapult. Leightner was hurled through the branches of a small maple tree and fell in a dense growth of bushes fully twenty feet from the wrecked car. Christie, who was not thrown quite so far, was tossed head and shoulders in the soft earth. The driver arose almost immediately unhurt, but his mechanician lay motionless. He was picked up and later carried to a hospital, where it was found that bruises and shock constituted his chief injury.

Meanwhile, Lancia had sped onward for an eighth of a mile. The crash, however, had buckled his sprocket, and a few seconds later his left hand chain rode the sprocket and ran off. He was compelled to stop for repairs, of course. These took time—valuable time, so much of it, that when the jaunty Italian again got going he was no



IMMEDIATELY AFTER THE RACE HAD ENDED.

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THE CROWD SURROUNDING LANCIA WHEN HE STOPPED AT THE GRANDSTAND.

longer the leader. He had been nearly half an hour ahead. He was now nearly half an hour behind. He drove with the recklessness and dash born of desperation.

While all this was happening, the tens of thousands, possibly the hundred thousand, congregated on or in the vicinity of the grandstand, were wondering what had become of their dashing hero. They knew that something had happened, but there was no telephone at the point where the accident occurred and information was not easy to obtain. Referee Vanderbilt himself came over to the telephone booth and inquired, "Where's Lancia?" It was some time before the query was answered.

"No. 4 has burst a tire at Lakeville," the megaphone announced.

A great buzz of sympathy swept the large crowd.

How the report arose is not known, but it was succeeded by one even more dumbfounding:

"Lancia is out."

The crowd was aghast. Few even knew who was the second man, now that the popular idol had fallen. They were still wondering and figuring when there came word of the collision.

"Leaving the gasolene station at Willetts, Christie ran into Lancia. Both cars are disabled, but no one is hurt," is the way the announcement ran.

There were some strong things said about Christie, his car and every one connected with them.

Then, and not until then, it was that the spectators who had not been "keeping tabs" awoke to the realization that there was such a man as Hemery in the race. They were amazed to find that he had crawled past Heath, and, with Lancia out, had a safe lead in the short distance to go.

But Lancia was not out. The man with the megaphone said so.

"No. 4 has passed Lakeville," he announced.

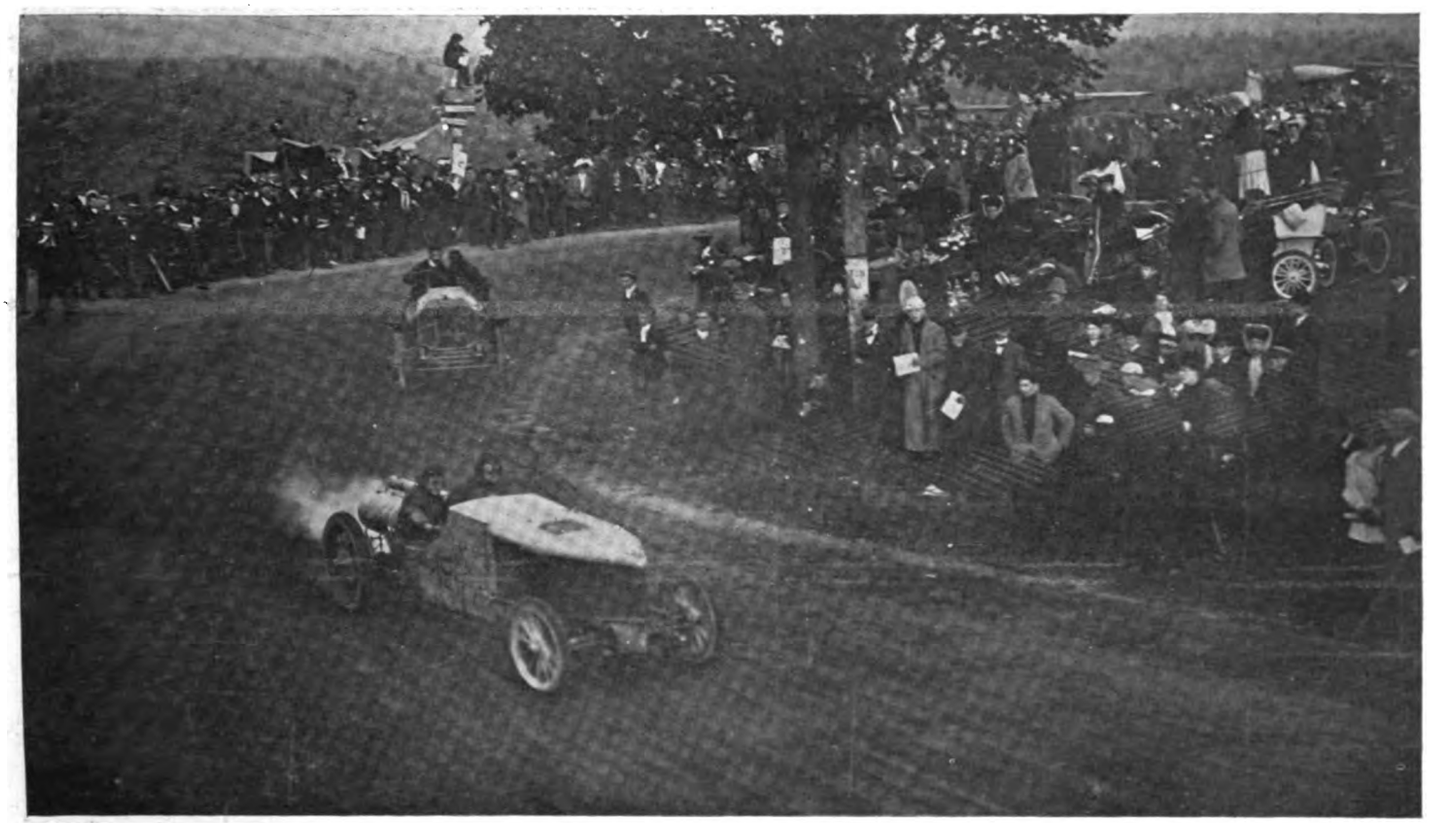
All knew for whom No. 4 stood. It was the first that had been heard of him since the collision. None even suspected that he was again in the fight. When the truth dawned on them, a mighty shout went up—the mightiest of the whole day. When but a few minutes later Lancia, no longer smiling, but with a deadly earnest face, dashed past at lightning speed, there was another acclaiming roar. But Hemery, Heath, Tracy, Szisz and Nazzaro all had passed him while he chafed in enforced idleness, and each was now a long way ahead. Szisz and Nazzaro fell on evil times in those closing rounds, however, and though in the final lap all was not well with Lancia himself—he had to again stop to have tires and chain readjusted—he passed those two and pushed ahead of Tracy also.

When he halted at the grandstand he supposed that he had beaten the American also. But there had been three minutes difference in the times of their starts, and while Lancia waited, with the stampeded crowd surrounding him, Tracy came with a roar long before three minutes had expired. He beat the Italian for third place by two minutes and five seconds.

There was no smile on Lancia's face. The lower lip had dropped and it seemed as if the big, brave son of Italy might blubber were he much provoked. The bitter in his cup of sweet had come to the top. The man with the megaphone had to climb into Lancia's car and shout loudly that a path might be cleared for him that he might reach the weighing station at Albertson.

The French team repeated its performance of last year. It again secured first and second places, but this time a genuine blown-in-the-bottle Frenchman won and not the make believe American article of the previous race. Heath, the victor in 1904, was the runner-up on this occasion. Hemery and Heath finished in front by virtue of consist-

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HEATH OVERTAKING WHITE AT HYDE PARK.

ent performance. They kept going all the time. Their stops were few and short. On the fourth lap and again on the ninth Hemery had tire trouble, while Heath had his portion on the eighth round. Both were careful drivers, and Heath especially took no chances on the turns. Hemery rarely looked up, but it was Heath's practice to salute the grand stand on almost every occasion. His wife was there. Perhaps that's the reason. Once passing the stand Hemery's chauffeur lost his goggles, and until the eighth lap this was absolutely the only incident that served to draw attention to them. It was only those who were keeping close record of the times who realized that Hemery was likely to have a "look in." At the end of the fourth lap Heath, Warden, Sartori, Szisz, Keene, Tracy and Lancia, of course, were leading him easily, but in the next round he began to move up. Some of them fell on evil times, and he passed Warden and Tracy, moving from eighth to sixth place. On the next lap he went by all save Lancia and Heath.

Then on the momentous eighth lap Lancia had his accident and Heath also had some minor trouble, and the sulky Frenchman in the black sweater, with "Darracq" spelled across his chest, went to the front and stayed there, though small woes delayed him on the last circuit and enabled Heath to cut down his lead from nearly five minutes to a scant 36 seconds. When they finished both men were acclaimed, but rather mildly. The crowd seemed too absorbed to cheer real lustily or in accord. Not one of the finishers —not even Tracy—received what may rightly be termed a real hearty cheer.

Wagner, Hemery's running mate, was in hard luck. On the second lap one of his French Dunlop tires exploded—the Darracq Company had some difference with the Michelin house abroad and changed their tire equipment at the eleventh hour—and on the third, when near Albertson, he lost his gear case, the grease was thrown out, and in no time at all the overheated gears locked fast and Wagner's long trip across the Atlantic was set at naught.

Szisz, in the Renault, did some really remarkable work. His first three laps averaged faster than all the others save Lancia, and on the fifth round he gave the grandstand a taste of his real speed. He and Keene came down the long, straight stretch together, "Herr" Keene in front, but with the Frenchman footing faster and gaining with every bound. Keene held the centre of the road, but almost in front of the stand the little red car swung sharply to the left, scattering dirt over the officials. For fifty yards they raced side by side; then the little red car fairly leaped in front of the big white one and drew away with every revolution. But Szisz had had his troubles and was doomed to have more of them. His cooling system had become deranged and time and again he was forced to stop and cool his engine and replenish his water supply, and twice, according to reports, to extinguish fire. How he ever did so well in the face of such difficulties is remarkable. Four of the five Frenchmen were running when the race was called off, Duray, in the big blue Dietrich, being the remaining survivor, who, though troubled, was "still in the ring."

It may well be supposed that after winning such a race the victor would be brimming over with good nature, and there are those who claim to have seen Hemery all agrin and with an overjoyed retinue of Frenchmen kissing the grime off his face. But certainly when he appeared at the Albertson to "weigh out" he exhibited some of the sour surliness that his face reflects. When he dismounted he was given a glass of stimulant. Then seeing a score of cameras levelled at him he made an angry rush at them, while one of his following actually did strike the photographer of Collier's Weekly.

When they dismounted from the Panhard, Heath and his mechanician were all a-tremble; if anything, the man was worse off than the master, and seemed sadly in need of the drink and raw eggs that were quickly handed him.

When he came on the scene Lancia had recovered his smile, and after shaking hands with Heath coolly took out a cigarette and puffed it as unconcernedly as if he had but just returned from a pleasure jaunt of 50 miles instead of a punishing drive of nearly 300 miles, most of it covered at a pace faster than any living man ever before had traveled on unrailed earth.

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WHEN THE CROWD TOOK POSSESSION OF THE ROAD, REQUIRING THAT THE RACE BE STOPPED.

Only Razzio's average of 64.8 miles per hour in the 311 miles race for the Florio Cup, in Italy, is comparable with Lancia's flight of the first 198 miles in the first 170 minutes of Saturday's race.

While at Albertson Lancia heard the story started by some idiot that he purposely had fouled Christie to put him out of the running. That he had no earthly reason to endanger his own life and his own chances, particularly with such driftwood as the Christie car, was patent; but the report greatly exercised the Italian, and later he took a touring car and drove to the Christie quarters to set himself right and to inquire solicitously about the injured chauffeur.

Heath rather bitterly denounced the inconsiderate crowd that not only intruded on the road but stood in the zones of danger at the corners and kept the drivers' nerves on edge.

When Tracy, obviously very tired, appeared at the scales he was cheered in a fashion by the crowd gathered there that made his drawn face light up; and the crowd did not overlook A. L. Riker, the man who designed and superintended the building of the Locomobile that Tracy drove so well and that was the first American car to finish well up in a speed contest with the best that Europe holds. Riker was also one of the official weighmasters, and the cheer given him caused the big fellow to blush like a school girl.

Some Things Happen to Hemery.

Hemery's good fortune ended with the race on Saturday.

On Sunday, while his car was being viewed by a number of spectators, one of them, after lighting a cigar, threw the unextinguished match on the oil soaked ground outside the garage. A blaze instantly followed. The car was somewhat damaged in its more vulnerable parts, not not enough to affect its operation, as it was in use the following day.

On Monday the surly young Frenchman learned that he could do no more racing for a full year. On that day the cable brought word that for insolence to the officials during the recent Florio Cup race in Italy he had been suspended for twelve months by the Automobile Club of Italy. On Tuesday the cable added that the Automobile Club of France would recognize and respect the action of the Italian organization.

Hemery, who is in no danger of ever becoming popular wherever he may go, is thus barred from all the big events of 1906.

When asked of what his insolence had consisted, he blithely stated that he had bluntly requested the Italian officials to go to hell—a blatherskite expression or desire which he repeated several times over.

The foreign drivers are not strong on receptions—a fact which is not difficult of understanding after one has encountered most of them. Pounding anvils or handling trowels would seem more in their lines. The Automobile Club of America, however, tendered them a reception on Monday night, and exactly three of them attended—Heath, a man of means, Duray and Tracy.

On Wednesday afternoon a professional promoter "tendered" them a dinner in the New York Press Club's aerial restaurant, at which only Szisz, Lancia and Nazaro put in an appearance. There were present, however, a score of newspaper men and others who had received invitations to come and pay $5 each, and several of them made speeches. The omnipresent Winthrop E. Scarritt was there, of course, and for a change read a poem. The most interesting things were said by Lancia and A. R. Pardington. Lancia said he appreciated the cordiality of his treatment and promised to tell "his King" about it. Pardington said that the Long Island authorities had already tendered the use of the course for a race next year.

Nearly all of the members of the French and Italian teams will sail for home to-day. Before leaving, Lancia and Nazzaro made a flying trip to view Niagara Falls.

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The Race as Viewed at Lakeville Where Gore was Spilled.

Again was Lakeville, with its so-called "hairpin" turn, "double S" and "curves of death," a disappointment, at least to the eight or nine hundred people who had assembled at this, the worst, angle of the course in the vain hope that the significant "something" would happen. They were doomed to disappointment, for, as in the elimination race, things persistently refused to happen. Only when Lytle, the American, and his Pope-Toledo plunged through the fence half a mile below the crossroads turn was blood drawn, and not a dozen of the watchers were there to see it or were aware of the occurrence. If the spectators were disappointed in that there were no killings at Lakeville, those who could appreciate skillful and daring driving were well rewarded; for here it was that some of the most reckless performances that occurred during the entire race were witnessed.

The scene of peaceful serenity of dawn suddenly was placated by one totally different. A sleepy guard who had been idling on the bank further down the road puffing a corncob pipe jumped to his feet, frantically waved a red flag, and a man with a megaphone in stentorian tones yelled:

"Car coming!"

There was no time to observe the beauties of nature or comment on the radiance and glory of a Long Island sunrise. The great race was on, and keen expectancy was pictured on every face, for each wondered which driver would be the first to appear. Suddenly a car came into view around a bend in the road, preceded by the steady s-p-p-p-p-p-l-t-t-i-n-g of the engine. The figure "1" was painted on its radiator, and there was no need to consult programmes—every one knew it was Jenatzy, the Belgian driver of the 120 horsepower Mercedes and the first of the contenders to be started from Mineola.

"He looks like the devil, for sure," observed one of the spectators close to the guard rope, and the remark seemed not malapropos. Completely enveloped in a long rubber cloak, his head covered by a hood and the entire upper part of his face hidden by a pair of huge goggles and only his moustache and pointed beard unprotected, Jenatzy certainly presented a Mephistophelian aspect. It did not require much strain on one's imaginative faculties to believe the Belgian anything but human. Scarcely shutting off power, the crack member of the German team whirled around the turn and was soon lost to view up the winding oiled road which leads to Hyde Park. The surprise came when Lancia was next sighted. The crowd gave him a cheer. It realized that thus early he had passed Duray (De Dietrich), France, and Dingley (Pope-Toledo), America.

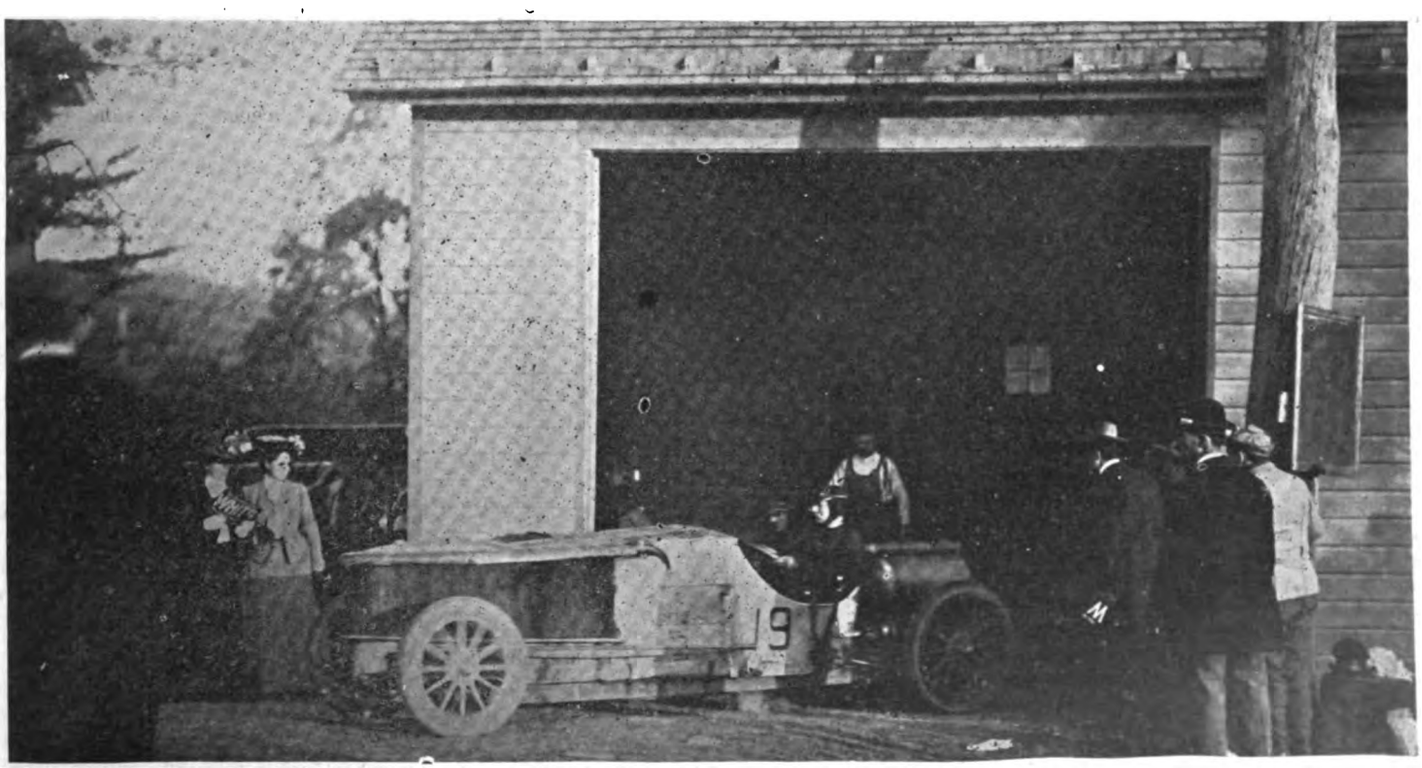
The men all took the turns in fearless style, and nothing happened until on the second round, when a puncture to one of Nazzaro's tires caused a thrill and a rush when he stopped for repair.

The first genuine excitement the crowd displayed was when Warden and Tracy came around on the third lap. The American



driver of the German car was leading by a few yards, and shouts of "Go, on Tracy! Go on! Pass him!" resounded in the air. But if Tracy heard he gave no outward sign, and continued to trail the German. Another time when a mild thrill passed through the spectators was when Lancia appeared on his fourth round.

Just before reaching the turn Christie, who was on his first lap, by the way, hove in sight, with Lancia coming up from behind almost three times as fast. A collision seemed unavoidable, but without shutting off power the daring Italian swung his car to the left up a slight bank, passed the American, was back on the oiled surface and around the turn before the crowd realized the skill required to perform the feat. When they did realize it their throats attested the fact.



WHITE EMERGING FROM THE FAMOUS BARN AT BULL'S HEAD.

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THE SPECIFICATIONS AND WEIGHTS OF THE CONTENDING CARS.

Driver.	Make.	H.P.	No. Cyl.	Bore.	Stroke.	Ignition.	xTrans. No. spds.	Drive.	Wheel Base.	Tread.	Tires Make.	Weight Pounds.
THE GERMAN TEAM.												
Jenatzy	Mercedes	120	4	185	150	L. T. Magneto	4	Chain	115	54	Continental	2,202
Keene	Mercedes	120	4	185	150	L. T. Magneto	4	Chain	115	54	Continental	2,204
Warden	Mercedes	120	4	185	150	L. T. Magneto	4	Chain	115	54	Continental	2,204
Campbell	Mercedes	90	4	168	145	L. T. Magneto	4	Chain	107	54	†Continental	2,219
THE FRENCH TEAM.												
Duray	De Dietrich	130	4	190	150	H. T. Magneto	4	Chain	112	52	†Michelin	2,206
Wagner	Darracq	80	4	6 in.	9 in.	H. T. Jump Spark	4	Shaft	106	53	xxFrench Dunlop.	2,208
Szisz	Renault	90	4	150	160	H. T. Magneto	3	Shaft	112	50	Michelin	2,202
Heath	Panhard	120	4	6¾ in.	6.8 in.	H. T. Magneto	3	Shaft	100	54	†Michelin	2,219
Hémery	Darracq	80	4	6 in.	6 in.	H. T. Jump Spark	4	Shaft	106	53	xxFrench Dunlop	2,208
THE AMERICAN TEAM.												
Dingley	Pope-Toledo	50	4	6 in.	6 in.	Jump Spark	2	Chain	100	54	Diamond	2,204
Tracy	Locomobile	90	4	7 in.	7 in.	L. T. Magneto	3	Chain	109	54	Diamond	2,196
Christie	Christie	60	*4	6¼ in.	6¾ in.	Jump Spark	2	Spur gear	96	57½	Diamond	2,094
Lytle	Pope-Toledo	75	6	6 in.	6 in.	Jump Spark	3	Chain	103	54	Diamond	2,200
White	White Steam	40	**2	....	....	—	1	Shaft	111	52	Diamond	2,180
THE ITALIAN TEAM.												
Lancia	F. I. A. T.	120	4	180	160	L. T. Magneto	4	Chain	112	56	Michelin	2,182
Nazzaro	F. I. A. T.	120	4	180	160	L. T. Magneto	4	Chain	110	56	Michelin	2,180
Cedrino	F. I. A. T.	120	4	180	160	L. T. Magneto	4	Chain	110	56	Michelin	2,180
Chevrolet	F. I. A. T.	90	4	165	165	L. T. Magneto	4	Chain	110	56	Michelin	2,204
Sartori	F. I. A. T.	90	4	165	165	L. T. Magneto	4	Chain	110	56	Michelin	2,192

xAll cars are provided with reverse.
xxHas wire wheels.
*Transversely placed at front of car.
**Compound engine.
†Weighed with magneto on. Strokes and bores of foreign engines expressed in millimeters.

Dingley was scored soon after Christie disappeared, and that was the last heard of him until after Lancia had passed on his eighth lap. The telephone man could not learn the whereabouts of the little Pope, but heard it had cracked two cylinders somewhere between Lakeville and Mineola.

Lytle's car was missing badly when he appeared on his third lap and his mechanician was working the pump for dear life. Hardly had the American skidded around the curve than appeared "Herr" Foxhall Keene, "Monsieu" Heath, Szisz and Tracy, all completing the fourth lap. Lancia then followed on his fifth lap, and he was given a hearty ovation, for, barring accidents, it looked an easy victory for the daring Italian. The jovial son from the land of spaghetti and garlic reached Lakeville at 8:26 on his sixth circuit, and exactly twenty-four minutes later had completed another round. That was the last seen of him for nearly two hours, and anxiety increased when Nazzaro, the former's team mate appeared.

Up to this time Nazzaro had been driving very conservatively, but now he urged his car forward with an abandon and recklessness that was marvellous to behold. Reports that Lancia had met with a fatal accident reached the now excited spectators and a groan went up. No official information could be obtained. The first news of Lancia was brought by himself when he reached the right angled turn at 10:02, driving even more superbly than before.

Of the American cars, the Locomobile was easily the favorite of the crowd at Lakeville—the two Pope cars, the White and the Christie were never considered serious factors. The White made three slow rounds, and when it reached Lakeville on the fourth the left front tire was missing. Walter White pulled up on the platform of the Diamond tire control at Lake Success, and lost twelve minutes while the crew fitted a new tire. White did not seem to care whether "school kept or not." When the tire men had completed their work White turned to his mechanic and said: "Well, Johnny, jump in; we might as well try to keep going." White said he had lost the tire at the Guinea Woods turn and had come slowly from there to Lakeville on the rim. That Walter White was unpopular with the foreign drivers—at least some of them—was proved by an incident that happened while the tire was being put on at Lake Success. Nazzaro was coming up the hill when he espied White laid up at the control. He nudged his mechanician, and the latter grinned, gave a triumphant Italian chuckle and yelled:

"Stia bene! Cattivo cano Americano!"

"Do you know what he means?" inquired the Motor World man of White.

"Yes," he replied, nonchalantly. "Just because I wouldn't run my car off into the ditch during practice trials throughout the week and let them pass me they take pleasure in calling me a miserable American dog."



THE MESSAGE TO THE GRANDSTAND.

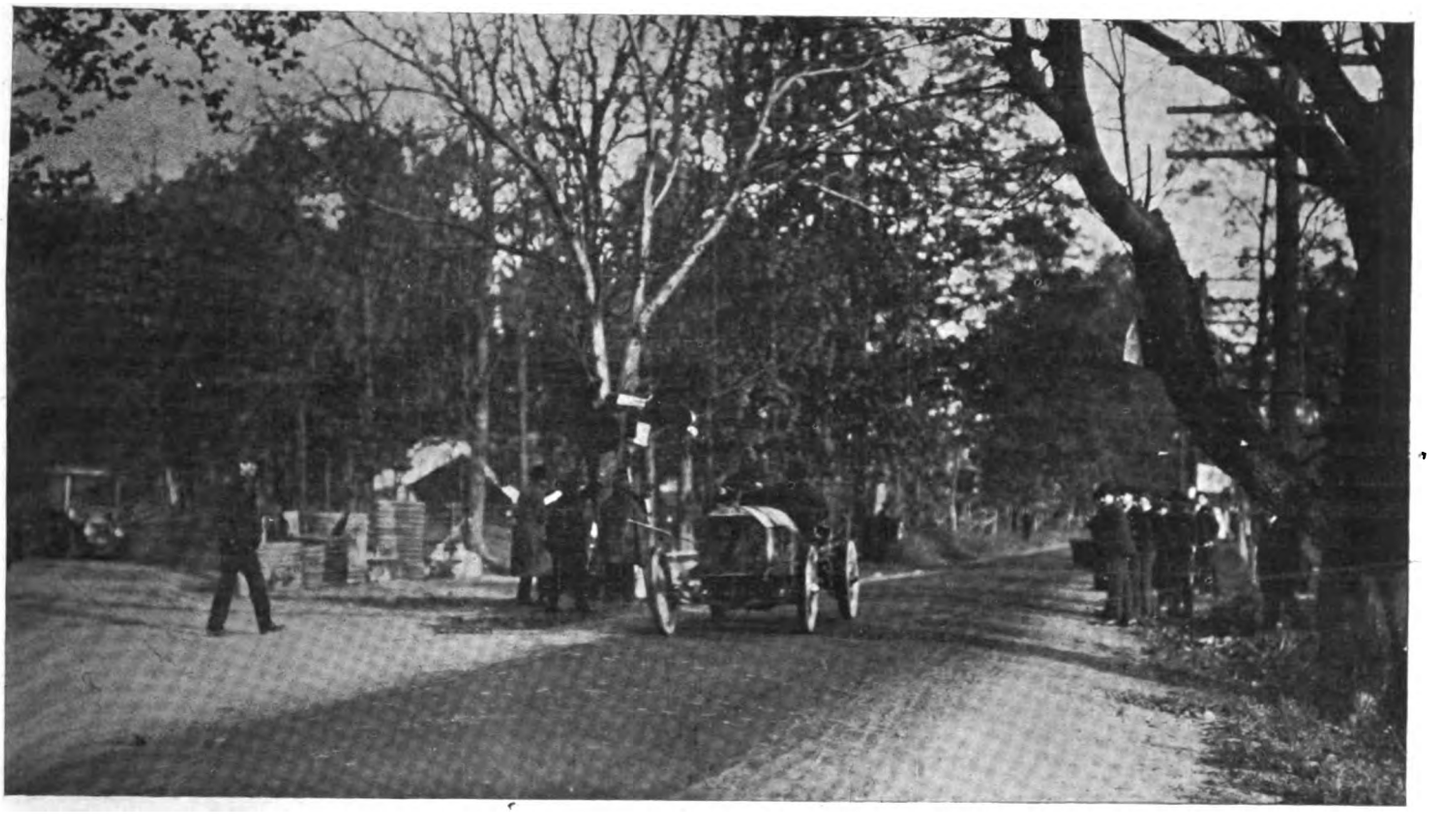
White made one more round, reaching Lakeville at 9:53. That was the last seen or heard of him.

Herbert Lytle, the American driver of the 75 horsepower Pope-Toledo, caused the only blood to be shed in the race. At Mineola, on his second round, he ran into a big Newfoundland dog, to the total demolition of the latter, and he and his mechanic were bespattered with blood. The collision with the dog caused the casting in the steering box, where the distance rods are connected to break. Lytle continued in the race, but drove very slowly. He stopped at Lakeville, on the second round, to "line up" his steering wheels. Dingley was also laid up here by an intake valve breaking and dropping into the cylinder. Dingley helped Lytle straighten the tension rod, and then both drivers paused long enough for a little girl to take a "snap" of them.

When Lytle stopped at the Diamond station on the fourth round to take on water and cool his cylinders he seemed very nervous. It was on the next lap that he came to grief. About half a mile before the first crook in the "hairpin" turn is reached the cracked casting gave way, breaking the distance rod. The car plunged through the rail fence, described a semi-circle and finally came to a standstill. Lytle and his mechanic jumped from their seats after the car stopped unhurt. Neither had received a scratch. The only damage the car received was a bent radiator and a pierced tire.

The flagman who was stationed at this part of the road had a narrow escape, however. Thinking the car was just skidding when it first began to run amuck, he climbed to what he considered a point of safety—on the top bar of the five rail fence. The big Pope ploughed through the fence as easily as if it had been so much cardboard and came within two feet of hitting the guard. As it was, he was hurled headforemost to the road and

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WARDEN (GERMANY) IN FULL CRY; DIAMOND TIRE CONTROL IN BACKGROUND.

escaped with a few bruises, more frightened than hurt, but hurt enough to draw blood from a few scratches on his cheek.

Of all the drivers who passed Lakeville none took the curves with more grace or daring than did Lancie, although Sartori drove a much better race than even his employer had calculated upon. Szisz, the dapper little Hungarian with the totally uncalled for name, nearly came to grief on one lap. Just past the right angled turn the road describes the contour of a double "S," skirting the Vanderbilt estate. Szisz attempted to negotiate each of the small curves at full speed, and at one of the bends his car skidded badly. He missed a telegraph pole by less than six inches. "Monsieur" Heath took the curves beautifully, as did Duray and nearly all the other drivers.

Very little attention was paid to Hémery, the Frenchman, who ultimately won the race, until the ninth lap, when he passed Heath just before reaching the second Lakeville turn. Then followed Lancia, Tracy and Szisz, also on the ninth. Hémery was the first to come around on the last lap, and Heath was only a few seconds behind. Then came Lancia, going like the wind, followed by Tracy, running better than ever. These four were the only cars to pass Lakeville on the last circuit. Both American and Italian were given a cheer that must have been heard a mile away.

Then the flagmen held aloft their yellow banners, the crowd swarmed over the course, and those who were fortunate enough to possess a motor car, cycle or a horse, or knew some one who did, "hiked" toward Mineola to learn the result.

Some Sidelights on the Race.

When the White and the Christie cars were performing so sadly E. R. Thomas, the Buffalo manufacturer who built the six cylinder Thomas racer that qualified in the elimination trial and was then cast out by the cup commission to make room for the more favored cars, was asked what he thought of the situation. He smiled a sad sort of smile.

"There are some things that speak louder than words," he said. "It is unnecessary—it would be almost sacreligious for me to express an opinion. There are some sins of commission the weight of which, the sinners cannot escape. The load which the sinners in this case are bearing is already so heavy that they must feel it keenly. I prefer to be charitable and not add to the weight of their burden."

If there is any man of consequence in the trade who was not present, it requires hard thinking to name him. Practically every man who did not avowedly come to New York to see the race discovered on Friday that business called him there. One traveller who arrived on that day expressed the situation very tritely.

"There's no use trying to do business," he said. "Every dealer and manufacturer within one thousand miles of New York is either here or is on the way."

There was not a little betting on the result of the race. Most of the wagers had to do with the relative positions of the American cars, but two well known tire men picked Lancia against the field and put $50 against $400. On the seventh round, when the Italian was nearly a lap ahead, they were extending invitations to their friends to join them in spending the $400. At the end of the tenth lap their hands were in their pockets. An equally well known accessory manufacturer wagered $300 to $100 against Szisz, and won, of course. Tracy against Lytle, at even money, was a popular bet, and caused much money to change hands. An even more popular wager was that no American would finish within the first five positions—a wager which Tracy's splendid performance upset badly.

Between noon and 7 o'clock Friday evening more than eighteen hundred automobiles were carried by the Thirty-fourth street ferry plying between New York and Long Island City. The boats were run under five-minute headway, and each carried from twenty-six to fifteen cars. How many were carried by the uptown ferries and how many crossed the river via the two bridges there is no means of estimating. There must have been all of five thousand cars parked around the course.

The joke of the occasion was the Long Island Railroad's "special train service." The regular train which left Long Island City at 5 arrived at Mineola before the "specials," which departed at 3:35 and 4 a. m. The latter were so heavily overloaded that the switch engines were not equal to the task of pulling them, and both were stalled en route and did not reach their destinations until long after the race had been started.

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GRAND RAPIDS IS HOAXED.

"Undefeated Frenchman" (Never Raced Before) Meets Oldfield—Scheuffler Win Thrice.

Not until Barney Oldfield and his pretentious retinue had departed for other fields to conquer did the good people of Grand Rapids, Mich., awake to a full realization that they had been hoaxed, and that right badly, too. It all happened on Saturday afternoon, 7th inst., and the occasion was the third annual race meet of the Grand Rapids "Auto" Racing Association, held on the one-mile track at Comstock Park. For months previous the daily newspapers had been full of Pickens's advance reports to the effect that "at great expense the racing association had secured Le Fevre, the daring and as yet undefeated Frenchman, to race against Oldfield."

When the "as yet undefeated"—probably because he never had a chance to be—Le Fevre drove on the track with a stripped 35 horsepower Peerless, then the crowd of a score or two more than two thousand people began to do some rapid thinking. And the more they thought the madder they became. How they discovered that Le Fevre is the young man with the French name who sometimes assists Oldfield in getting his car into shape is still a mystery; but they did discover it, and then followed some pretty sulphuric remarks which would not look well in a missionary tract.

There is not much to be said about the so-called five-mile match "race," except that the ubiquitous Barney gave the "snail eater" three-quarters of a lap handicap, overhauled him at the four-mile post and then beat him to the tape by an eighth. The time of the first heat was 5:31 2-5. The second heat was won still more easily.

Beyond this farcical feature the other events were interesting to local motorists, most of them being stock car events and comprising the usual runaways. One thing, however, the little 18 horsepower Jackson performed beautifully and "copped" nearly all the honors. Oldfield appeared once more in a three-mile exhibition, and circled the oval three times in 3:00 flat. His best mile—the last—was the fastest time clocked during the day. The watches gave 59 seconds.

Six cars started in the first event, a five-mile open for cars listing under $1,500. E. F. Scheuffler, driving a stripped 18 horsepower Jackson, took the lead at the first turn, with Ellis, in a 12 horsepower Franklin, following. The little Jackson car ran away from the field, and at the end of the first mile had gained a lead of a quarter over Ellis. Scheuffler increased his advantage each lap, and lapped the field before the finish. Time, 7:10 2-5. Scheuffler's car also won the five-mile "free for all" and finished a good two seconds ahead of G. W. Hart's Franklin.

Summaries:

Five miles, for cars listing under $1,500—E. F. Scheuffler, 18 h. p. Jackson, first; J. Ellis, 12 h. p. Franklin, second. Time, 7:10. Also ran—J. H. Poisson, 18 h. p. Mitchell; J. E. Thomas, 16 h. p. Rambler; Charles Boyden, 18 h. p. Rambler, and E. W. Nowstine, 12 h. p. Franklin.

Five-mile match between Barney Oldfield, 60 h. p. Peerless, and Le Fevre, 25 h. p. Peerless—First heat—Won by Oldfield. Time, 5:31 2-5. Fastest mile—Second, 1:00 2-5. Second heat—Won by Oldfield. Time, 5:28 2-5.

Five-mile exhibition—E. H. Scheuffler, 18 h. p. Jackson. Time, 6:18 1-5.

Five miles, free-for-all—E. H. Scheuffler, 18 h. p. Jackson, first; J. Ellis, 12 h. p. Franklin, second. Time, 7:21. Also ran—Poisson, Thoma, Boyden and Morse.

Dewar Cup Race Declared Off.

Because it has been announced, several of the cars participating in the Vanderbilt race had been damaged, the race for the Dewar Cup, which was scheduled to have taken place on the Coney Island Boulevard, Long Island yesterday (Wednesday) has been declared off. The second race for the trophy, designated by some as emblematic of the mile championship, by others fondly recalled as the time when joyful exuberance was rampant, will therefore be held in connection with the forthcoming Florida beach carnival.

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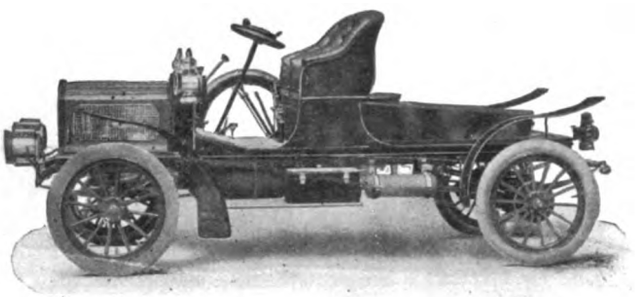
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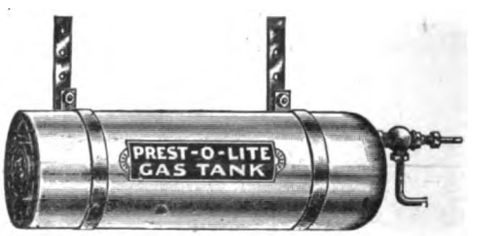
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That this fact is far from being appreciated by the average owner of a car and probably by not a few manufacturers as well, forms an eloquent testimonial to the extraordinary success of such engines in practice, and suggests, moreover, an explanation as to why some engines work very much better at times than others, as well as why some engines give very much better results than others of the same size. It is almost beyond the power of the human mind to clearly grasp the order and rapidity of the operations that actually take place within the cylinder when running at the speed referred to above; that is, about 1,200 revolutions per minute, but it is easy to realize that a minute inspection of every part, coupled with the exercise of a vigorous imagination, is necessary in order to study out ways and means of securing better results. Endless and complicated calculations have been found necessary to determine by theory the correct dimensions and "set" of the various parts, so that the liability to error may be appreciated. Everything occurs in such an extremely short period of time, temperatures and pressures vary over such an extremely wide range, and many of the functions are of such a very complex character, that, even if the engine were intended to run always at a certain constant speed, the correct setting of the valves and the adjustment of the carburettor, not to mention the hundred and one other minor matters, would be little more than guesswork, unless some direct means were available for ascertaining what was actually taking place within the cylinder. Much of the data at present available has been obtained gradually by experimenting on the principle of "trial and error," and fortunately there is usually no lack of visible and audible symptoms which are fairly easy to diagnose. Unless, however, some accurate records are available from which can be seen separately what has occurred during each portion of the cycle of operations, it would be impossible to know whether further improvement might reasonably be looked for or not. Mechanical records showing precisely what has been going on inside the cylinder while the engine is in operation are naturally the only sure method of ascertaining the cause of faulty action and the means of remedying it. But it has been found extremely difficult to make accurate indicator diagrams from engines running at such high speed. Indicators made for steam engine use, however delicately constructed and adjusted, have fallen short of fulfilling the required conditions in that their moving parts are too heavy to act properly at such speeds, both because their inertia has prevented them from getting under way sufficiently fast and because their momentum has caused them to travel too far. Distorted and misleading diagrams have consequently been the result, so that the value of such observations has been very small, if, indeed, they have not been worse than useless.

Although it gives a diagram of exactly the same nature, the Manograph forms a radical departure from the stereotyped instruments generally employed for this purpose. Both the weight of the moving parts as well as their range of travel has been reduced to a minimum. The pencil and paper of the ordinary indicator are equally conspicuous by their absence, while a further difference lies in the replacement of the usual piston and cylinder by a diaphragm. Instead of the pencil a beam of light is employed, and in place of the paper there is a ground glass screen or sensitized plate, such as is used for photography. The light is obtained from a stationary lamp forming part of the apparatus, and the screen upon which it is thrown does not move. These obvious advantages are all obtained by the simple expedient of using a small circular convex mirror, little more than half an inch in diameter, to reflect the beam of light on to the screen. Normally this reflector is in a vertical position in the instrument, but it is arranged so that it may be tilted about its pivot longitudinally or latitudinally by different portions of the mechanism. The lateral movement is transmitted to it by the crank shaft of the engine undergoing the test through the agency of a flexible shaft, and is so arranged that the horizontal beam of light which it causes to traverse the screen corresponds with the forward and backward movements of the piston in the engine cylinder. This beam of light consequently follows the movement of the piston in the manner that the paper does beneath the pencil of an ordinary indicator. The pressure in the combustion chamber serves to give the mirror its longitudinal movement through the mechanism in the instrument which forms part of the apparatus. For this purpose it is piped to the engine, and variations of the pressure cause the mirror to move the beam of light in a vertical path up and down the screen; hence the position of the latter corresponds to the pressure in the cylinder, in the same manner that the vertical position of the pencil does in the ordinary indicator. From this it will of course be plain that the mirror moves in both planes simultaneously and the beam of light accordingly "draws" a diagram of the usual type on the screen.

When the engine attains sufficient speed the complete diagram is reproduced so quickly on the ground glass screen that it is rendered visible in its entirety, and the re-

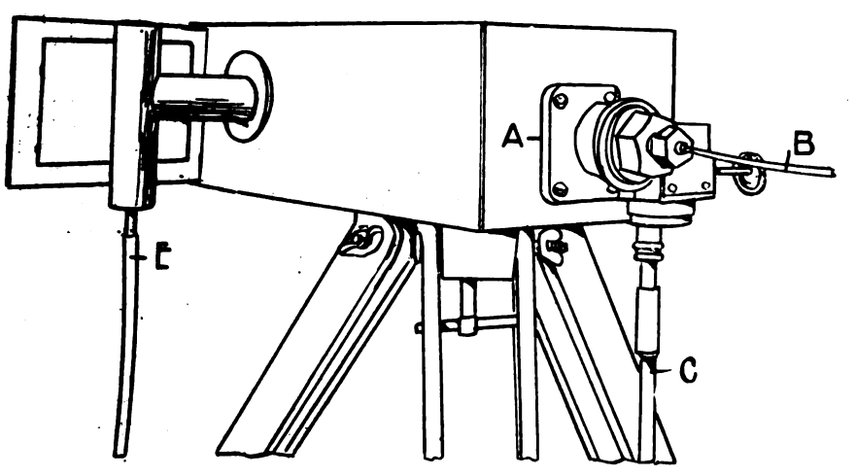


Fig. 1.

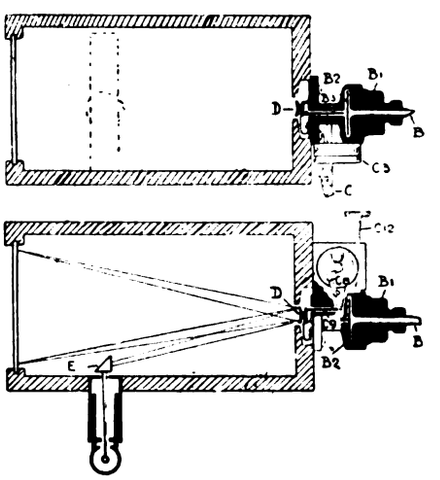


Fig. 2.

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tina receives a complete image—the diagram standing out as though formed by lines of light. It is thus possible to watch all the changes that may be taking place in the cylinder as they actually occur, although of course by this method no permanent record is produced and the memory must be relied upon to preserve the result. However, by substituting a photographic plate for the ground glass, which is subsequently developed by the usual process, the records may be perpetuated. Photography is also resorted to where the speed of the engine is not sufficiently great to permit of an accurate conception of the diagram being formed by the unaided eye.

The complete instrument, mounted on its tripod, is shown in Fig. 1, and resembles a camera somewhat in appearance. The body consists of a light rectangular box, all moving parts of the mechanism being centred in the attachment A. At the other end of the box is the ground glass screen partly withdrawn in order to be visible. This also forms a holder for photographic plates as in an ordinary camera. The instrument is self-contained and may be set up near the engine to be tested, the necessary connections being shown at B, which is a small tube to be connected to the combustion chamber of the cylinder, the flexible shaft C terminating in a taper plug for coupling to the end of the crank shaft, and the rubber tube E connecting the generator to the acetylene burner in the lamp shown just a short distance in front of the screen.

An idea of the working of the instrument may be obtained by reference to the sectional drawings shown. The light of the acetylene flame is immediately opposite a minute hole in the centre of a disc which would otherwise completely close the telescopic tube connecting the lamp to the case of the instrument. Only a thin thread of light is therefore admitted into the case, and this is directed upon the prism E. The position of the latter is adjustable and its function is to concentrate the shaft of light on the mirror D, from which it is reflected on to the screen, the convex surface causing the rays to converge to a point. Normally the position of the mirror is such that the beam of light is thrown on the screen about three-quarters of an inch above its lower edge, the two movements which the mirror undergoes causing the point on the screen to travel back and forth and up and down anywhere within the range afforded by the area of the ground glass.

The functioning of the entire instrument centres in the mirror, so an idea of the working of the latter is necessary to an understanding of the use of the Manograph. D, the mirror, is balanced on a small stationary pin. The bracket in which the latter is formed is triangular and rigid with the mirror. The two projecting arms of this bracket rest upon movable pins which are normally prevented from tipping the mirror about its fixed fulcrum by means of springs pressing down upon them. These pins may both slide longitudinally in the holes through which they pass in the casting A1 (fig. 2), and they are specially shaped and carefully placed with relation to the shape and position of the arms, so that the movements of the mirror shall correspond to their own backward and forward travel. One pin controlled by the pressure in the engine cylinder causes the up and down movement of the mirror, and the other is given a reciprocating motion exactly following that of the piston in the cylinder. A diaphragm, the outside face of which is in direct communication with the combustion chamber of the cylinder and its variations of movement corresponding to the rise and fall of pressure are communicated to the mirror by a pin, B3. The movements of the diaphragm are naturally not exactly proportional to the pressure, a correction being made for this by shaping the inner end of the pin so that it varies the effective length of the lever arm.

The pin C9 moves back and forth against the spring C10 by the crank and connecting rod C8. The crank pin has but a very short throw, and the length of the conecting link bears the same relation to the throw of the crank pin that the length of an ordinary connecting rod does to the throw of the crank shaft on the average gasolene engine. As a result, the pin C9 is compelled to reciprocate in synchronism with the engine piston, causing the beam of light to do likewise on the screen. It is obviously necessary that the beam of light should arrive at each end of its range of travel across the screen at exactly the same instant that the piston completes its inward and outward strokes. Accordingly, in order to insure means of bringing the movement of the mirror into synchronism with that of the engine piston without disturbing the connection of the flexible shaft and the crank shaft, means are provided for throwing the pin actuating mechanism of this part of the apparatus out of action through the agency of a small clutch. Synchronism of the two is then obtained by using the hand adjusting screw C12. This is readily done accurately in practice by retarding the ignition and watching the shape of the diagram; the completion of the compression stroke can be recognized on the screen and it can be made to occur in the proper place with reference to the working of the instrument.

Compiled data is supplied by the makers of the instrument, showing the relation between vertical deflections of the beam of light and pressures on the diaphragm, thus enabling any diagrams that are obtained to be redrawn accurately for the purpose of calculating indicated horsepower when required. The data are, however, primarily intended for the purpose of permitting the records to be measured for pressure.

Steels for Motor Car Usage.

At the annual meeting of the Iron and Steel Institute, held in Sheffield recently, Dr. Leon Guillet, of Paris, contributed a paper on the steel used for motor-car construction in France. He omitted the subject of tool steels, and dealt only with that used in the actual construction of motor cars.

He recognized the fact that this industry has during the last few years had most influence on the metallurgy of the special steels. He did not regard this as surprising. The wide scope of the industry, the marked difference between the cost price and the selling price of its products, the heavy responsibilities which surround it, the abnormal working to which it subjects metals, the lightness, which is an essential quality, were all circumstances, he said, which had rendered the industry most exacting as to the quality and the property of the metals of which it makes use. Nor did Dr. Guillet think it surprising that the leading firms should have decided to surround themselves with all the most modern scientific precautions as to the acceptance of materials, to study the products most recently launched on the market, and even to inspire the creation of new products that may be adequate to its requirements. He treated, in considerable detail, with the chief special steels employed, of which there are two principal groups—ternary steels (alloys of iron, carbon, and a third substance) and quaternary steels (alloys of iron, carbon, and two other substances).

Innovations in Ignition Devices.

"Dry" is only a relative term as applied to the dry cell, for unless the electrolyte in the cell is moist there is no chemical action set up, and as soon as the latter does become actually dry the cell is dead. Two new cells recently placed on the market, and shown for the first time at an electrical exhibition now in progress in London, take advantage of this principle by sending the cell out entirely dry. When wanted for use it is only necessary to use a little water in the case of one, the "Reeplen," while the "Latent" contains a capsule filled with water, and this is broken when the cell is needed. This obviates the somewhat aggravating experience of finding the "spare" cells, if anything, a little "deader" than those that have just failed and also permits dealers to carry a stock without fear of deterioration.

Among other things of interest to the motorist at the same exhibition were numerous coils and improved tremblers, the Marconi trembler marking quite a departure from current practice. It is pivoted and counterbalanced, the spring being at the armature end, although there is also a small auxiliary spring at the counterweighted end, which strikes against an adjusting screw. The Walker dynamometer was also of interest. This is designed particularly for use with small internal combustion motors, its range being ¼ to 26 brake horsepower. The power is absorbed by the revolution of air vanes, and the speed, being known, the results can be read almost at a glance from the position of the vanes by means of calibrated data supplied with the instrument.

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Engine.	30-35 H. P., 4 cylinders, water cooled.
Ignition.	Sims-Bosch Magneto—make and break spark.
Transmission.	Sliding train. 3 speeds forward and one reverse.
Rear Axle.	Bevel gear drive, clutch driven hub. Ball bearings.
Front Axle.	I Beam section. Ball bearings.
Frame.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.
Wheel Base.	104 inches.
Wheels.	Imperial whalebone, grade A 2nd growth hickory.
Tires.	Continental 34 x 4.
Valves.	Mechanically operated, inlet and exhaust interchangeable.
Carburetter.	Float feed, requiring no adjustment.
Brakes.	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
Body.	Full aluminum, double side entrance.
Equipment.	Two head lights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000.

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinder—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body.

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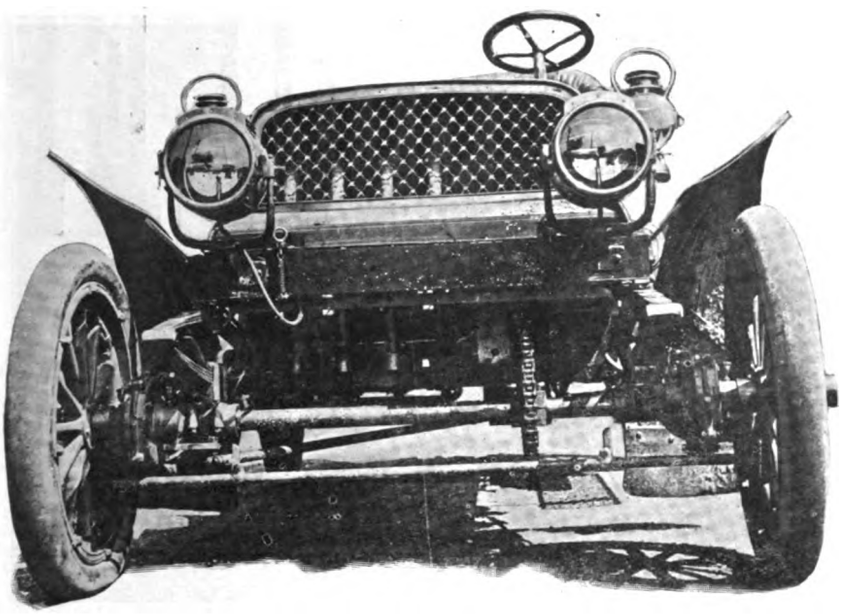
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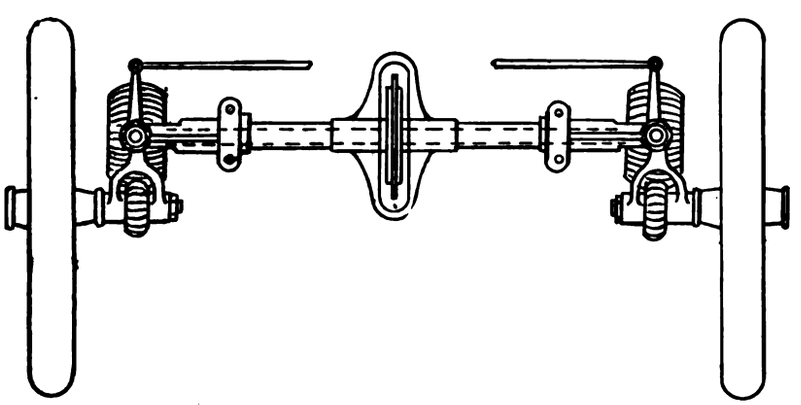
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Campbell's Front Wheel Transmission.

Various forms of four wheel drive have been made the subjects of patents during the last few years, attention being in the main directed to the perfection of a drive of this kind for heavy commercial vehicle work in which maximum traction is essential. This can, of course, only be obtained by driving all four wheels. But for the necessity of so mounting at least one pair of the wheels that the vehicle may be directed this would involve no difficulties. The problem naturally centers in this feature.





The universal or Cardan joint was naturally first resorted to for this purpose, but owing to its construction is said to cause difficulty in steering. A recent invention designed with a view to overcoming this feature, as well as others inherent in that form, is the device upon which patents were granted during the first part of the present year to L. W. Campbell, Woonsocket, R. I.

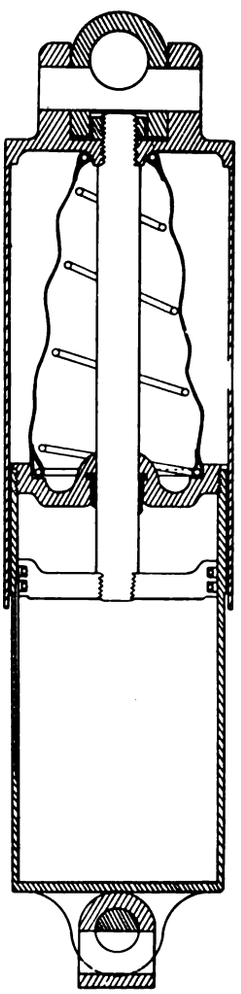
Its appearance, as applied to a Marion air cooled car, is shown by the accompanying photograph, but a view of the mechanism itself is necessary in order to form an idea of the manner of its operation. This may be had by reference to the line sketch. It consists of a gear in the form of an ellipse made fast to the shaft and pinion with curved face meshing therewith. Normally the axis of the pinion and that of the driving gear are parallel, but owing to its form, which closely approximates that of a sphere rather than an ellipse, the angular relation of the axis of the pinion to that of the large gear may be varied at will in order to steer without disturbing the efficiency of the drive, as altering this relation does not change that which the teeth of the two gears bear to one another. This always remains constant, and the full face of the pinion is engaged whether the wheel is hard over or running straight ahead. The inventor claims that the uncertain steer found in the universal joint is thus eliminated.

Vagaries of Steel.

Very often new steel will not pass tests that it should pass, but after a few weeks it is found to have undergone a change and passes the tests right up to the mark. Then, again, steel that was perfect when it was tested often gets "sick." It cracks or becomes brittle, although other steel made at the same time in the same way remains perfectly sound. No man knows to-day why these things happen, but lots of people are trying to find out and are not having an easy time doing so.

"Insides" of the Kilgore Cushion.

Few things are attracting more deserved attention than those means that will reduce or eliminate the heavy shocks that contribute much undesirable discomfort to automobile travel. While the air tire takes care of the vibration, it is becoming generally recognized that the ordinary spring suspension of general usage leaves much to be desired. It follows that such devices as the Kilgore air cushion are receiving and in increasing measure will continue to receive attention.



While the Kilgore, which is now being made by the Kilgore Autotmobile Air Cushion Co., in Boston, is not exactly strange to the motoring world, its "insides" never have been laid bare. The accompanying illustration now performs that service. The principle of the cushion is simplicity itself—two telescoping cylinders compressing a volume of air, one cylinder having a by-pass, or escape, to give gradual release to the air. To render the piston dust proof a distended "umbrella" of chamois skin is suspended in the upper cylinder by a coil spring.

The device has been subjected to some extended tests and has undoubted claims to general attention.

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The Week's Patents.

801,150. Pneumatic Tire. James A. Murphy and William S. Manning, Holyoke, Mass., Assignors to Manning Manufacturing Company, Springfield, Mass.,a Corporation. Filed December 5, 1904. Serial No. 235,000.

Claim.—1. The combination with the casing of a pneumatic tire of the clincher type, of a shoe located in the casing between the latter and the inner tube, the circumference of the shoe being greater than the normal internal circumference of the casing, at the point of the greatest diameter of the latter.

801,155. Folding Hood for Automobiles. Harry Raphael and Emory D. Toops, Indianapolis, Ind. Filed June 21, 1905. Serial No. 266,203.

Claim.—1. An automobile provided with a foldinghood comprising two principal parts secured at opposite sides of the engine machinery thereof, each part composed of a plurality of sections hinged together and folding down one upon another, and latching devices connected to the terminal sections of the two principal parts of the hood for connecting the two parts of the hood together over the engine machinery.

801,209. Pneumatic-Tire Valve. Littleton K. Buck, Freehold, N. J. Filed December 12, 1904. Serial No. 236,473.

Claim.—1. In a pneumatic valve, a counterbored valve-tube, inclosing an operative valve mechanism, and provided with an integral flange at its lower end to impinge upon the exterior surface of the tire or other object to be inflated, in combination with an integral button-headed tubular securing-stud adapted to be, by suitable appliances, entered directly through the tire or other object to be inflated, and firmly secured in the reduced bore of the flanged lower end of the valve-tube, and with its button-head to firmly impinge the interior surface of the tire or other object to be inflated.

801,323. Reversing-Gear for Motor-Driven Vehicles. Hubert A. Kiser and Christian P. Anders, Westover, S. D. Filed September 12, 1904. Serial No. 224,122.

Claim.—1. The combination with the traction-wheel of a motor-driven vehicle, of a driving-shaft; a driving gear-wheel fast thereon; a ratchet-wheel loose on the shaft an internal gear carried by said wheel; a pinion fast on the traction-wheel; a rotary gear-carrier loose on the shaft an intermediate pinion carried by said carrier in mesh with the driving gear-wheel and the internal gear of the ratchet-wheel; means for both locking said carrier against movement in one direction; and against relative movement on the ratchet-wheel in the other direction.

801,334. Wheel. Petr Parik, Mistek, Austria-Hungary, Assignor of two-thirds to Antonin Parik and Jan Geisler, Moravska, Ostrava, Autsria-Hungary. Filed December 20, 1904. Serial No. 237,699.

Claim.—1. In a spoke-wheel the combination of spokes having wedge-shaped inner ends and tenons formed on their outer ends, of a center nave having two flanges thereon between which the inner ends of the spokes fit, a wheel-ring having outwardly-extending flanges, said ring having openings therein adapted to receive the tenons on the outer ends of the spokes, filling-pieces fitting between the flanges of the wheel-ring and between the said tenons, cape covering the tenons and holding the filling-pieces in position and a tire fitting over the caps and filling-pieces, substantially as described.

801,355. Self-Propelled Vehicle and Meth-

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SPARK COILS, $4. Differential Gears, $9. 1-2 x 1 inch roller chain 50 cts. per foot. Lowest prices on lamps and tires. Send for bargain sheet. DETROIT CYCLE & MOTOR CO., Detroit, Mich.

A TEN PASSENGER wagonette; sample car, 1905-1906 model; steam; price and description on application. THOMPSON AUTO CO., Olneyville Sq., Providence, R. I.

FOR SALE—40 horse power, 1905 up-to-date Thomas Flyer. Used for demonstrating purposes. Very best condition. A bargain. C. A. COEY & CO., 1323-1325 Michigan Ave, Chicago.

WE will build an Automobile Garage at 105th St. and Columbus Ave. on 2½ city lots and lease same for a term of years to desirable party. For further particulars inquire of SOBEL & KEAN CO., 109th St. and Manhattan Ave., New York.

FOR SALE—One 16 h. p. "Rambler" $600.00; one 12 h. p. "Ford" $400.00. Both 1904 Models and in A1 condition. Address F. T. EVANS, Connellsville, Pa.

ON SALE, for account of customers ordering 1906 models—Two 4-cylinder Locomobiles, guaranteed by us. A good chance to secure a standard car at a reasonable figure. THE LOCOMOBILE COMPANY OF AMERICA, Broadway cor. 76th Street, New York.

ON SALE, for account of customer ordering 1906 model, one four-cylinder Locomobile, guaranteed by us. A good chance to secure a standard car at a reasonable figure. THE LOCOMOBILE COMPANY OF AMERICA, Broadway, corner 76th Street, New York.

FOR SALE—1904 Winton touring-car, $750; 1904 Franklin with detachable tonneau, $750; Both cars in perfect condition. A. W. GRANGER, Grand Hotel, Cincinnati.

I HAVE FOR SALE one Olds runabout; one four-cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars, also steam delivery wagons, all in first-class running order. Write for particulars, if interested. K. A. GROUT, Orange, Mass

FOR SALE OR EXCHANGE—Steam racing car, 40 horsepower; 36-inch wheels in perfect condition; speed, mile in less than a minute on straight away. He'd world's record for nine months, making a mile in 1:00 on mile track. Can use small car. JOHN HOWARD, 109 N. Broad St., Trenton, N. J.

CHAUFFEUR—Experienced, reliable man, wishes position; best references. HOWELL, 309 West 50th Street, New York.

FOR SALE—1903 Winton, oil and gas lamps, side baskets; 1904 style crank shaft, in best condition; 1903 two cylinder Pope-Toledo, oil and gas lamps, in perfect running order; 1904 two cylinder, 10 horsepower Ford, with tonneau, used five months: 1904 Model H Rambler, with tonneau; 1904 Duryea, tiller steer; all in fine running order; make your best offer on any of them. EASTON AUTOMOBILE CO., Easton, Pa.

BETTER FINISHES?—That's what many automobile manufacturers desire or require and without egotism, I know I can supply it. Have had 25 years' experience with high-class carriages and wish to connect as foreman of painting department in automobile factory. Am competent to mix own colors and have executive ability. Best of references. G. F. M., care Motor World, New York.

1905—32-38 horsepower Royal Tourist car; first class condition; equipped with Sprague top, glass front, acetylene lamps, odometer, extra tire; owner to go abroad reason for selling; $2,600. GEORGE S LARRABEE, Syracuse, N. Y.



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od of Controlling the Same. Ernst J. Berg, Schenectady, N. Y., Assignor to General Electric Company, a Corporation of New York. Filed April 20, 1904. Serial No. 204,052.

Claim.—1. The method of controlling over wide ranges the speed of a self-propelled vehicle deriving its motive power from an electric geenrator driven by a prime mover, which consists in varying over wide ranges the speed of the prime mover.

801,359. Pneumatic Tire. Henry W. C. B. Cave, London, England. Filed October 1, 1904. Serial No. 226,876.

Claim.—1. A pneumatic-tire cover composed of strips that are so interlaced with one another as to lie obliquely with respect to the periphery of said cover; and that have their breadths so increased at intervals dependent to the transverse section of said cover, as, when the cover is in position on the tire to cause the said strips to form at their crossings a close mesh.

801,390. Hydrocarbon-Motor. Abbot A. Low, Horseshoe, N. Y. Filed December 2. 1904. Serial No. 235,138.

Claim.—1. In combination with the combustion-chamber of a hydrocarbon-motor, a mixing-chamber of elongated form provided with a vertical extension at each extremity, a horizontal screen in each of said vertical extensions, means for injecting alcohol against the screen in one vertical extension and means for injecting ekrosene against the screen in the other extension, and an induction-valve interposed between said mixing-chamber and the said combustion-chamber, for the purpose and substantially in the manner set forth.

801,425. Vehicle-Wheel. Robert Weideman, Hawkeye, Iowa. Filed, January 21, 1905. Serial No. 242,175.

Claim.—A wheel of the class described, the same comprising a springy felly and spokes secured thereto, a hub having radial sockets for the inner ends of the spokes to slide in, and springs secured to the spokes and to the hub to resist the inward sliding of the spokes, and springs engaging the spokes and the felly intermediate the spokes.

801,452. Sparking Device. Benjamin G. Gilbough, Chicago, Ill. Filed December 30, 1904. Serial No. 238,927.

Claim.—1. The combination with an engine-cylinder of an ignition device connected therewith, comprising a fluid-actuated rotary wheel, an electrode actuated by said wheel, a coaching electrode, an electric circuit completed through said electrodes, and means for making the external portion of the circuit at proper intervals, for the purpose set forth.

801,481. Canopy-Frame for Automobiles. Lewis C. Shipley, New York, N. Y. Filed January 18, 1905. Serial No. 241,587.

Claim.—1. In an automobile-canopy frame, a dashboard, frames pivoted to said dashboard, a pane of glass between said frames, said frames adapted to support the said glass, and between which said glass may slide, the said frames being pivoted so that when folded one will lie over the other, a board extending across the upper ends of the frame, and catches adapted to secure the frames of the board together.

801,517. Speed-Reduction and Driving Gear. Joseph S. Fairfax, London, England. Filed May 11, 1904. Serial No. 207,434.

Claim.- 1. A speed-reduction and driving gear combining a cover, having a bearing, with a shaft revoluble in and projecting from said bearing; a sun-wheel secured to the shaft in close proximity to the bearing; a wheel having internal teeth secured to said cover so as to surround and be concentric with said sun-wheel; a planet system of wheels rotatable on pins and revoluble between the said sun and stationary wheels; a disk carrying the said pins and having a hub rotatable upon the outer end of the shaft, and a power-transmitting member formed on or secured to the said hub, substantially as and for the purpose hereinbefore described and shown in the drawings.

801,521. Running-Gear for Automobiles. Jackson O. Haas, Pottsville, Pa. Filed October 21, 1904. Serial No. 229,481.

Claim.—1. In a device of the class described, a frame structure including longitudinal side bars of Z-iron and cross-bars connecting the same; two of said cross-bars, disposed at and near the rear ends of the structure, being extended beyond the side bars of the latter; in combination with springs connected with the extended ends of said cross-bars, and a rear axle supporting said springs.

801,539. Carbureting Apparatus and Feed Therefor for Internal-Combustion Engines. Joseph S. Moreland, Rochester, N. Y., Assignor of One-Half to Moss Mosely, Rochester, N. Y. Filed April 21, 1904. Serial No. 204,222.

Claim.—1. In an explosive-engine, a carbureter comprising a supply-tube for supplying combustible fluid under suction, and controllable means for admitting air under pressure to said supply-tube for forcibly spraying combustible fluid therefrom, substantially as described.

801,580. Attaching-Collar for Pneumatic Tires. Jules C. N. Fouilloy, Paris, France. Filed February 20, 1905. Serial No. 246,588.

Claim.—1. The attaching-collar for non-splitting protecting devices of pneumatic tires of any not-cemented systems, comprising a leather piece having in its center an opening corresponding to the spoke of the wheel, such leather piece being strengthened by a metallic part, and carrying hooks with spring-fastenings, intended for holding the attaching-rings of the non-slipping protecting device, substantially as above described.

801,605. Speed-Indicating and Alarm Device for Vehicles. John E. Parrish and Richard H. Smith, Springfield, Mass. Filed October 31, 1904. Serial No. 230,830.

Claim.—1. In a speed-indicating device, the combination with a casing, having a centrifugal governor, therein, provided with a hollow, upwardly-open, spindle, and having at its top a supplemental indicator-casing having a slot through the wall thereof, and which casing is also constructed for the reception of interchangeable cards, of a stem within the hollow spindle, subject to vertical movement on the operation of the governor, and having its upper end located in the indicator-casing and having a part movable closely to, and registering on, the indicator, and means connected with the governor for imparting its rotation thereto.

801,606. Carbureted-Air Machine. Firmin Picard, Montreal, Canada. Filed December 3, 1904. Serial No. 235,327.

Claim.—1. A carbureted-air machine comprising a casing, separated rotatable supports mounted within the casing and each having projections extending toward the companion support, a strip of fabric mounted upon each of the sets of projections, and a blast-conduit situated between the supports and opening within both of the strips.

801,632. Vehicle-Wheel. Thomas Appleton, New York, N. Y. Filed January 25, 1905. Serial No. 242,587.

Claim.—1. In vehicle-wheels, a rim, a solid-rubber tire secured to rim, having transverse slots therein extending through from side to side, metal braces at the sides of the tire, and pins secured to the said braces and passed through the said slots, normally engaging their outer end walls.

801,645. Internal-Combustion Engine. Almon B. Calkins, Belleville, N. J. Filed October 24, 1904. Serial No. 229,707.

Claim.1. In an internal-combustion engine, the combination with stationary pistons arranged axially in line with each other, and means supporting their inner ends, of reciprocating cylinders surrounding said pistons, means connecting the cylinders together, a crank-shaft, and means connecting said cylinders in driving relation with said crank-shaft.

801,674. Change-Gearing. Joseph S. Moreland, Rochester, N. Y., Assignor of One-Half to Moss Mosely, Rochester, N. Y. Filed May 10, 1904. Serial No. 207,266.

Claim.—1. In a change-gearing, the combination of a main shaft, a secondary shaft, means constructed to drive said secondary shaft by said main shaft, gears mounted on said shafts, means for securing said gears to their respective shafts, means for shifting said gears into and out of mesh, and a common operating means constructed to actuate said gear-securing and gear-shifting means, substantially as described.

801,712. Gearing. George P. Dorris, St. Louis, Mo. Filed October 12, 1904. Serial No. 228,238.

Claim.—1. The combination with a cylinder of a motor-vehicle vapor-engine having an extension, the engine crank-shaft mounted therein, a clutch and transmission-gearing associated with said crank-shaft and clutch, of a housing attached to said engine extension and serving in its association therewith to incase said clutch, crank-shaft and transmission-gearing, substantially as set forth.

801,720. Inflation-Valve. John E. Keller, Jr., Litchfield, Conn. Filed July 16, 1904. Serial No. 216,857.

Claim.—1. An inflation-valve including an externally-screw-threaded tubular stem for insertion through a rim and provided with an external longitudinal flat portion, valve mechanism within the stem, a nut fitted upon the stem for engagement with the rim, locking-washers embracing the stem at opposite sides of the nut and provided with flattened portions engaging the flat portion of the stem to prevent rotation of the washers, and a dust-cap fitted to the outer end of the stem and engaging the outer washer to prevent looseness thereof.

801, 726. Coil Friction-Clutch. William H. Lindsay and R. Haden Couper, Johnstone, Scotland. Filed August 26, 1904. Serial No. 222,322.

Claim.—1. In a friction-clutch, the combination with shafting, of a pair of clutch members carried thereby, one of said members comprising a coil composed of a plurality of convolutions encircling said other member and having its central convolutions of a greater bore than the end convolutions, and means for throwing said clutch members into clutch.

801,727. Coil Friction-Clutch. William H. Lindsay and Haden R. Couper, Johnstone.

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Scotland. Filed August 26, 1904. Serial No. 222,323.

Claim.—1. In a friction-clutch, the combination with shafting, of a rotary support loosely mounted thereon, a clutch member keyed to said shafting adjacent said rotary support, a second clutch member comprising a coil encircling said first clutch member and having

801,728. Coil Friction-Clutch. William H. Lindsay, Johnstone, Scotland. Filed August 26, 1904. Serial No. 222,324.

Claim.—1. In a friction-clutch, the combination with shafting, of a friction-drum carried thereby, a coil member, comprising a plurality of convolutions, operatively connected at one end to said shafting and loosely encircling said drum, and means for exerting a positive local winding pressure successively on separate convolutions of said coil member at distant points longitudinally thereof.

801,804. Axle-End. Hiram P. Maxim, Pittsburg, Pa., and Herbert W. Alden, Hartford, Conn., Assignors to The Electric Vehicle Company, Jersey City, N. J., a Corporation of New Jersey. Filed January 15, 1902. Serial No. 89,828.

Claim.—1. As an article of manufacture, an axle-end comprising in one integral piece a substantially vertical body portion, stub-axle-supporting jaws projecting from one side of the body portion and an axle attachment and an upwardly and inwardly extending load or strain supporting tang projecting from the opposite side of the body portion, substantially as shown and described.

801,823. Automobile. Ernst J. Berg, Schenectady, N. Y., Assignor to General Electric Company, a Corporation of New York. Original Application Filed April 20, 1904. Serial No. 204,052. Divided and this Application Filed May 22, 1905. Serial No. 261,498.

Claim.—1. In combination, an internal-combustion engine an electric generator driven thereby, an electrical ignition device for the engine, and means for connecting said ignition device to points on the generator-commutator having a difference of potention equal to only a fraction of the terminal voltage of the generator.

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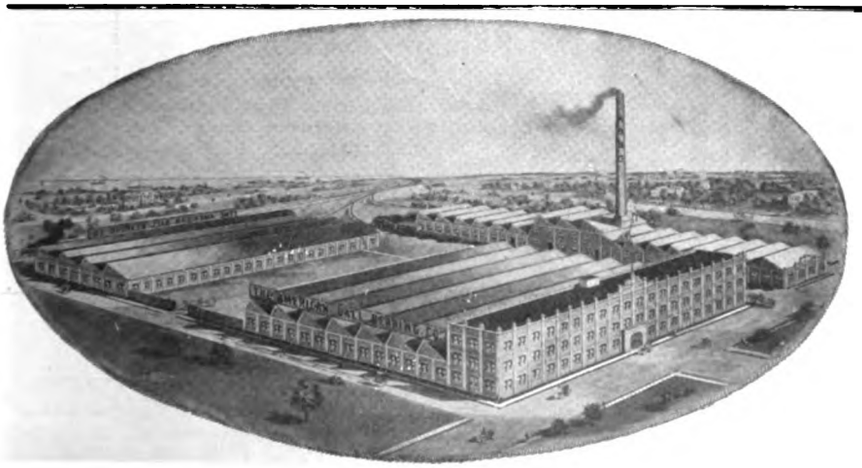
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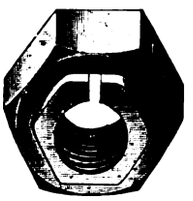
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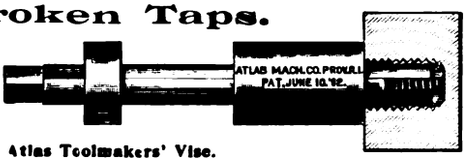
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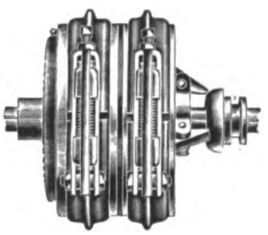
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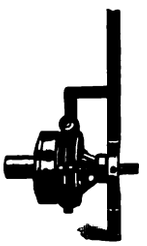


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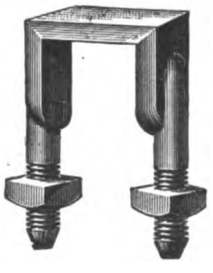
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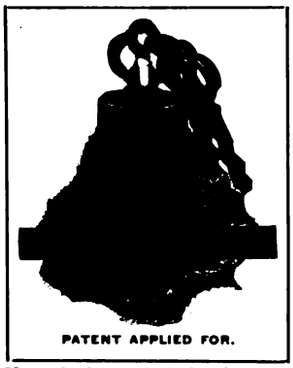
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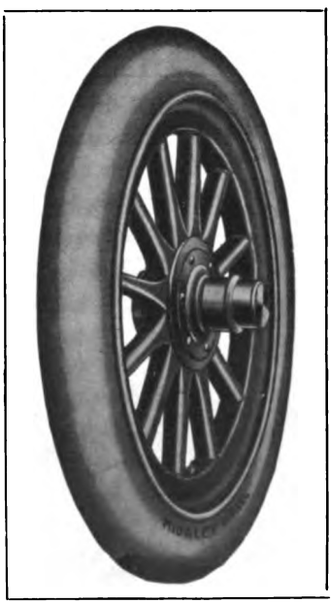
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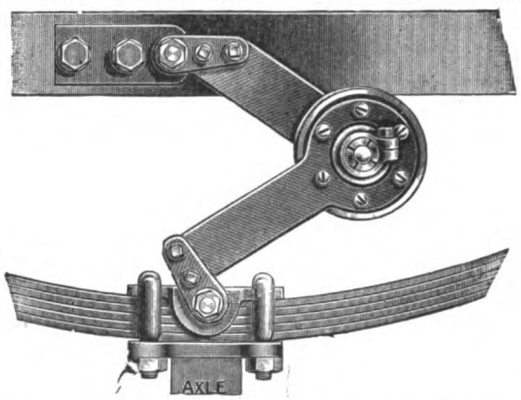
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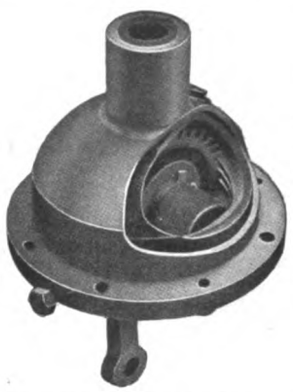
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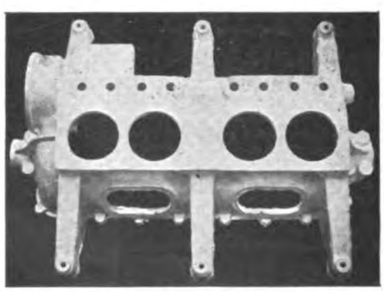
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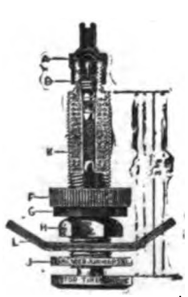
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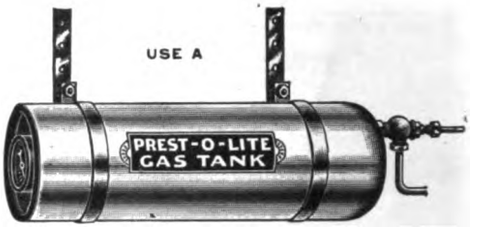
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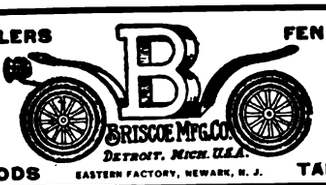
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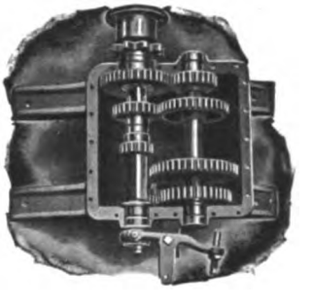
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TIRES $10 UP

We Undersell Everybody

Only $10 for new 28x2½ tires fresh from factory. Other styles and sizes in proportion.

We Do First Class Repairing

Pay freight on all tires sent us, examine and send estimate of cost of repairs before doing any work. We vulcanize, fill, retread and recover old tires. Price for Newmastic Filling, $5 for 28x2½ tire.

D. GRAHAM CYCLE CO., 601-605 Madison St., Chicago

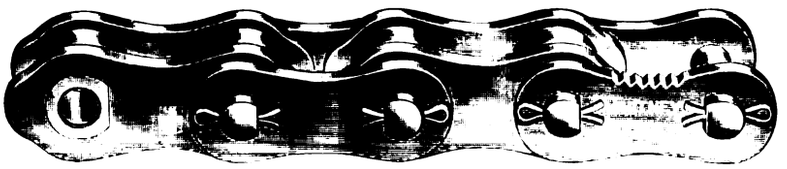
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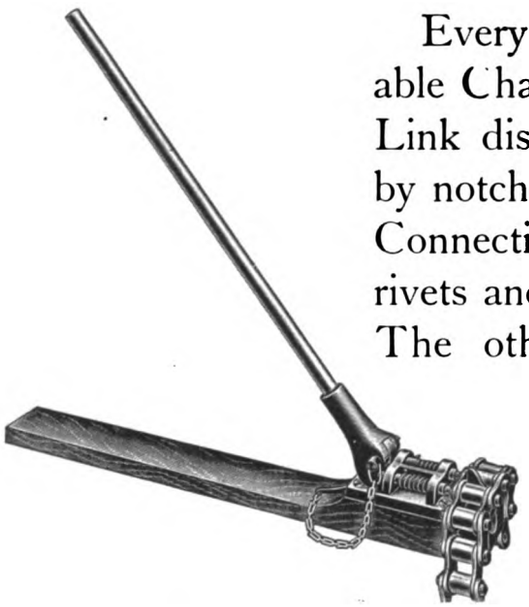
NO NOISE

WATCH THE EFFICIENT DOUBLE CHAIN DRIVE

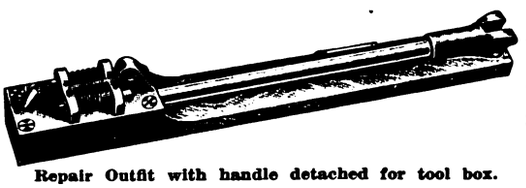
NO TROUBLE

On 1906 Model Cars with "WHITNEY" Chains.





New "Whitney" Chain Repair Outfit ready for operation.



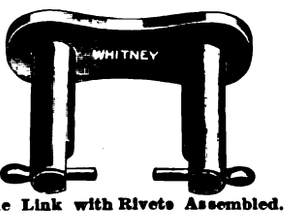
Repair Outfit with handle detached for tool box.

Every "WHITNEY" Detachable Chain contains one Connecting Link distinguished from the others by notches in the top surface. This Connecting Link fits loosely on the rivets and may be removed by hand. The other Detachable Links are purposely forced tightly on to the rivets but can be easily detached by means of the New Repair Outfit.

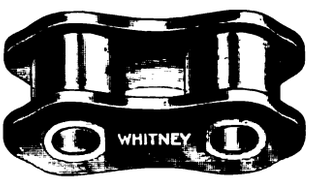
A boy can repair 100 "WHITNEY" Detachable Chains in less time than it would take an expert, with the assistance of a complete machine shop, to repair one damaged direct gear drive.



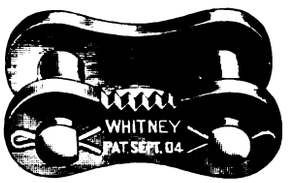
Side Link, Plain.



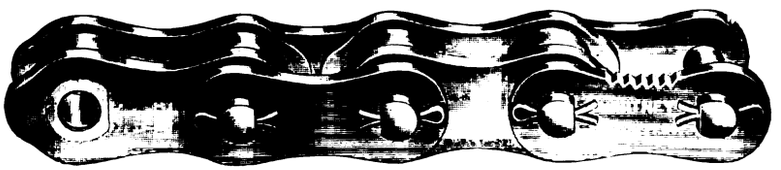
Side Link with Rivets Assembled.



Assembled Center Block.



Connecting Link.

PATENTED  PATENTED

"WHITNEY" DETACHABLE ROLLER CHAIN.

SPROCKETS must be machined CORRECTLY if best results are desired.

THE WHITNEY MFG. CO., - Hartford, Conn.

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There are reasons why

MORGAN & WRIGHT TIRES
ARE GOOD TIRES

Reason 3

AMALGAMATION OF FABRIC AND COVER.

¶ The difficulty arising from the separation of fabric layers and rubber cover is chiefly attributable to either a soft, easily-chipped cover stock, which permits dirt and pebbles to get under it, or to inadequate vulcanization.
¶ MORGAN & WRIGHT tires are made on the theory that the only satisfactory way to remedy this is in the making of the tire.

☞ By a series of exhaustive tests we have proven that it is impossible to so thoroly amalgamate these parts as to make separation practically impossible; and every Morgan & Wright tire MUST STAND THE TEST before it leaves the factory.

¶ This is demanded quite as much for our protection as for yours. It is one of the essential requirements in the making of a thoroly good tire.

MORGAN & WRIGHT, Chicago.

PHILADELPHIA—Cor. Broad and Vine Sts.
BOSTON—228 Columbus Ave.
CLEVELAND—347 Huron St.
DAYTON—417 E. 5th St.
DETROIT—265 Jefferson Ave.
NEW YORK—214 W. 47th St.
SYRACUSE—212-214 S. Clinton St.
MINNEAPOLIS—717-719 Hennepin Av.
ATLANTA—35 Edgewood Ave.
SAN FRANCISCO—1067 Mission St.
DENVER—1562 Broadway.
ST. LOUIS—538 Vandeventer Ave.
LOS ANGELES—940 S. Main St.

Business and the OLDSMOBILE

The development of the Oldsmobile as a public utility has been steady and uninterrupted.

The Oldsmobile Standard Runabout meets the requirements of the business and professional man, the rural delivery carrier, the commercial traveler, and is an indispensable adjunct to modern life.

The Commercial Vehicle has reached the highest development in the Oldsmobile.

You will find in our line the vehicle which most fully meets your requirements, whether for city or country delivery, light trucking, city or rural transportation, depot or park service.

Write us for full information and details. There is big money to be made with our commercial cars and it will pay you to get in the game early. Ask for Circular 53.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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Are You a Ford Agent for 1906?

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date.

There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season. We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

Write and get in touch with us.

FORD MOTOR COMPANY, - - - Detroit, Mich.

MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO.

Canadian Trade supplied by THE FORD MOTOR CO., of Canada, Ltd., Walkerville, Ont.

The BAKER ELECTRIC

The Baker Electric Depot Carriage,



The Most Elegant of all Electrics.

ALSO

RUNABOUTS, STANHOPES, SURREYS, ETC., ETC.

WE ARE READY TO TALK BUSINESS.

THE BAKER MOTOR VEHICLE COMPANY, CLEVELAND, OHIO.

C. B. RICE, Broadway and 58th Street, New York Agents.

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The Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

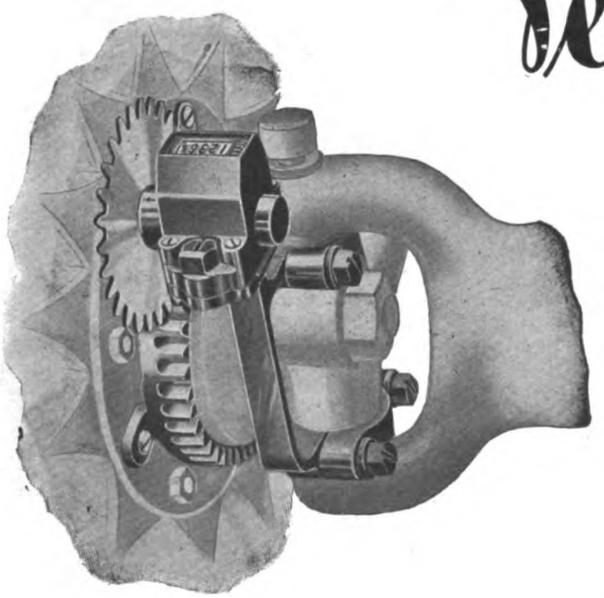
Members of American Motor Car Manufacturers' Association. Agents in principal cities.

New York Agents: MAXWELL-BRISCOE, INC.

Foreign Representatives (except Canada and Mexico), RICHARD IRVIN & CO., 25 Broad St., New York City.

Veeder

"It's Nice to Know
How Far You Go."
Veeder Odometers.



Every Veeder Odometer we send out is designed for the particular make and model car for which it is ordered. That ***insures accuracy.***

You will want an Odometer when you go touring this summer. Ask your dealer or send to us for catalog.

THE VEEDER MFG. CO.,

26 Sargeant Street, Hartford, Conn.

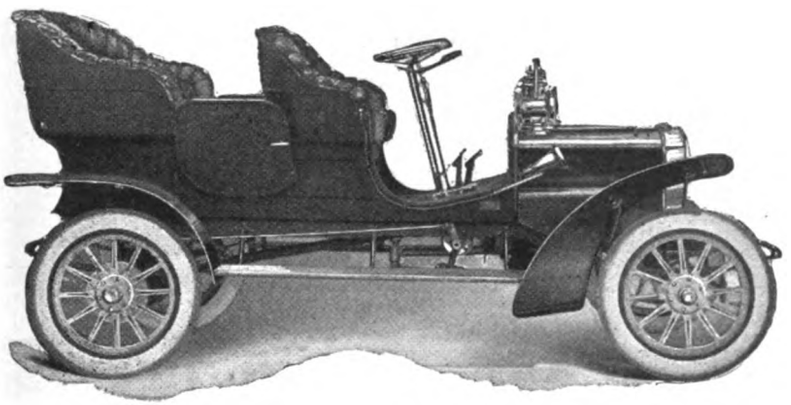
Cyclometers Odometers, Tachometers, Counters and Fine Castings.

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NO NOISE BONE-RACKING BELTS CHAINS PULLEYS GASKETS TRUSS ROOS STRUT RODS GO WITH THE NORTHERN

ITS SILENCE AND SIMPLICITY ARE ON A PAR WITH ITS EASY RIDING QUALITIES. IT IS A COMFORTABLE CAR AS WELL AS A DEPENDABLE ONE.

Detachable Side Entrance Tonneaus Supplied if Desired.



No Delays. Immediate Deliveries Guaranteed.

NORTHERN MANUFACTURING COMPANY, Detroit, Mich.

Member A. L. A. M.

PETER FOGARTY, New York Agent, 142 West Thirty-eighth Street.

Wear-Resisting Construction.

That's the secret of the unparalleled success of the

"Firestone"

SIDE WIRE TIRES.

These tires have proved adequate to the demands of heavy commercial use when the others have failed; not in one case, but in thousands. We have the evidence to support this statement—we are prepared to back up every fact by the supreme test of proof.

Then why not "Firestone"?

Firestone Tire and Rubber Co.,

AKRON, OHIO.

New York Chicago Philadelphia Boston St. Louis San Francisco Los Angeles

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POPE Waverley ELECTRIC AUTOMOBILES

The dull season made profitable for the agent by the sale of Pope-Waverley Electrics.

DO YOU realize how much extra money you can make by pushing the sale of Electric Automobiles? The Pope-Waverley Station Wagon and the Coupe-Top Chelsea are so particularly adapted for fall and winter use that it is only necessary to bring their good points to the attention of the people to secure profitable customers.

We can make prompt deliveries on these models and will be glad to have you visit our Indianapolis factory and see the reason for our enthusiasm on the future of the Electric carriage.

We make 15 distinct models, $850 to $2250.

POPE MOTOR CAR COMPANY, Indianapolis, Ind.

NEW YORK CITY, 1733 Broadway PROVIDENCE, R. I., 15 Snow Street
BOSTON, MASS. 223 Columbus Avenue WASHINGTON, D. C., 819 14th Street
SAN FRANCISCO, CAL., 451 Mission Street



Coupe-Top Chelsea, Price $1450.

"QUEEN"

The name stands for a line of cars that has no equal, either as a selling proposition for the dealer, or an investment for the individual buyer.

Staunch in construction, powerful in action, reliable in operation, and simple in control, Queen Automobiles best meet every requirement of automobile worth.

Queen Runabouts. Queen Det. Tonneaus.
Queen Touring Cars.

Made right and sold right by

C. H. BLOMSTROM MOTOR COMPANY,
Detroit, Mich.

C. A. DUERR & CO., Inc. 1787 Broadway, New York City Agents.

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should ***not*** buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the ***two*** cycle two cylinder Elmore engine.

Understand—the ***two*** cycle two cylinder Elmore engine produces ***two impulses every time the fly-wheel turns.***

As you know, the two cylinder ***four*** cycle furnishes only ***one*** impulse every ***fourth*** time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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TALKIN' OF THE COST OF UP-KEEP

The Royal Tourist cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs. Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little, touring car or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is made and put together with proper care. Money is freely spent for best materials. That's why!

That is also the reason why we were able to roll our car over in the Vanderbilt Trials and then finish among the first.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 432 South Fifth St., Minneapolis; AUTOMOBILE SUPPLY CO., Lim., 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

GAS-AU-LEC

Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

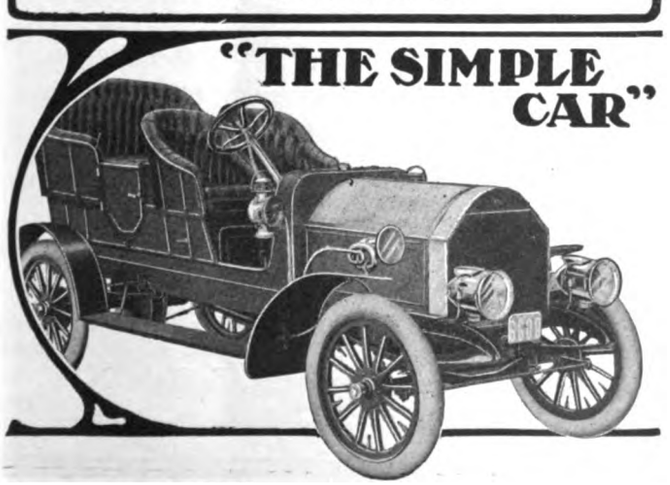
THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.



HAYNES

Here's a Record for You!

A 1906—4 cylinder—HAYNES, stock Touring Car, stripped, with a racing seat on it, proved it's utility by it's remarkable performance in the elimination trials for the Vanderbilt cup.

Especially constructed racing monsters were completely outdistanced by the HAYNES.

But one stop was made during the entire race, and this through no defect in the mechanism of the machine.

Isn't this a wonderful record?

Isn't this pretty good evidence in support of our claims?

And—better still, isn't the HAYNES a good car to sell because of this evidence of endurance, speed and simplicity.

Agencies are now being contracted. Send in your application at once.

Orders for exact duplicates of this car are being booked in the order of their receipt, Write at once.

The Haynes Automobile Co.,

Members A. L. A. M.

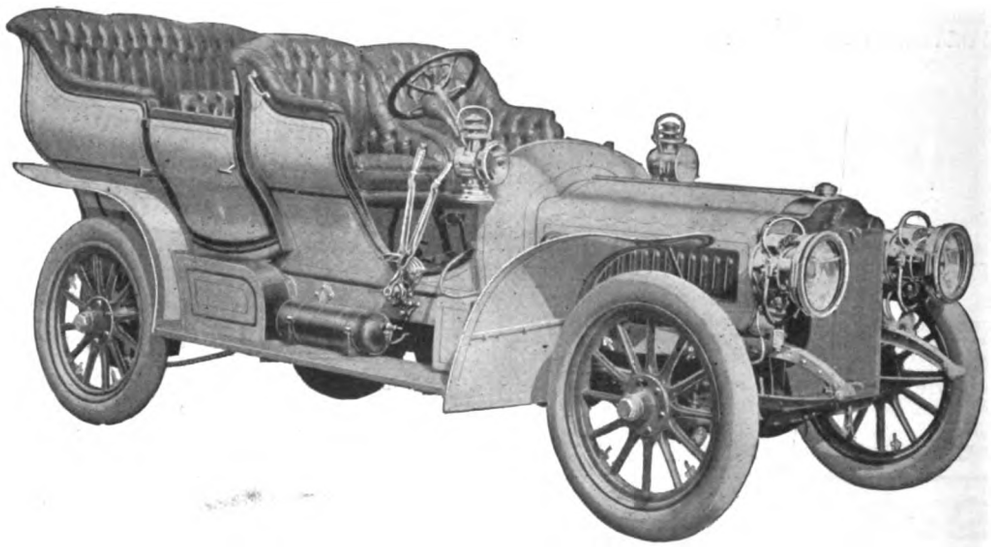
Kokomo, Indiana

New York Chicago

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THOMAS

1906



In spite of the fact that we are completing the finest fire-proof factory in the world, with a capacity of one thousand high powered automobiles per annum, it looks very much as though last year's scramble for Thomas Cars was going to be repeated.

Last year, premiums of all the way from $150 to $750 were refused for Thomas cars. We were likewise compelled to refuse orders for 50% of our capacity.

The only sales we lost were those of a few unposted persons here and there, who couldn't see how so much value could be sold at so reasonable a price.

That idea was demolished last season, and the fact that the 1906 Thomas is far costlier than the 1905 model without a change in price makes it unquestionably the greatest automobile value in the world to-day.

In brief, what you have to consider is a car which demonstrated last year its superiority to cars costing from $1,500 to $4,000 more money.

A car with 50 H. P. (actual), which is quieter than it was last year; smoother than it was last year; has larger motors; is far more beautiful; far more comfortable, seating five or eight, all fronting forward; with perfect clutch; perfect control; four-speed Hess-Bright ball bearing transmission; four powerful brakes; forgings throughout; material guaranteed to be the costliest made; fifteen Hess-Bright bearings and one roller.

Analysing this 1906 offering of power, beauty and the highest degree of construction, and bearing in mind what I have said to you about the probability of a greater demand than we can supply even with our increased capacity of 1,000 high powered automobiles per annum —do you not think it advisable for you to investigate the Thomas without delay by consulting our nearest representative?

E. R. THOMAS,
for The E. R. Thomas Co., Buffalo, N. Y.

Members Association of Licensed Automobile Manufacturers

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Traction Companies Find

Diamond

SOLID SIDE WIRE

TRUCK TIRES

The Most Economical, Becauso They Not Only Resist Wear but They STAY ON.

Let us send you some useful information about sizes and weights of solid Tires.

THE DIAMOND RUBBER COMPANY,
AKRON, OHIO.

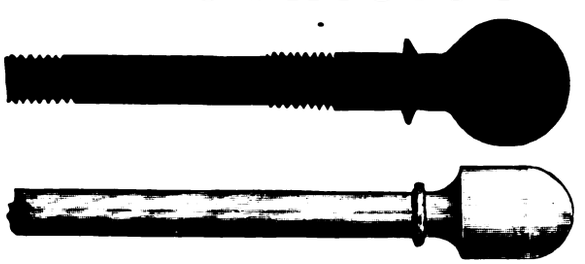
BOSTON—174 Columbus Ave. DETROIT—310 Woodward Ave. SAN FRANCISCO—608 Mission St.
PHILADELPHIA—304-306 No. Broad St. ST. LOUIS—3966 Olive St. DENVER—322 Boston Building.
BUFFALO—715 Main St. CHICAGO—167-169 Lake St. MINNEAPOLIS—611 First Ave. S.
NEW YORK—78 Reade St. CLEVELAND—223 Huron St.

The

MODERN METHOD

Welding by

ELECTRICITY



Makes impossible special shaped forgings a possibility.

Saves hours of machining. Should put manufacturers in a position that would enable them to make our thoroughly equipped welding plant profitable.

STANDARO WELDING COMPANY, - Cleveland, O.

McCLERNAND & ORR, Chicago
Western Representatives.

WHY

PREMIER CARS

Appeal to All Classes.

TO THE PROFESSIONAL MAN—Because of its simplicity.

TO THE BUSINESS MAN—Because of its readiness to go at all times.

TO THE REPAIR MAN—Because of its perfect accessibility to working parts.

TO ALL MEN—Because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5000 recorded miles—is only a trifle over one cent per mile for the car—or 1-5th to 1-4 cent per mile per passenger—total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

"The air cooled season never ends."

Side Entrance Model - $1500 Runabout - $1250
Our new (1906) Doctor's Special, $1425 Light Truck, $1400

PREMIER MOTOR MFG. CO., No. 212 Shelby Street, Indianapolis, Ind.
Members American Motor Car Manufacturers Association.

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Congratulations

from a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

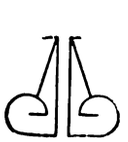
WITH THE BAILEY TREAD.

"We wish to congratulate you because of the splendid way your Goodrich-Bailey tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, the latter seems to be a sure thing on some tires that we know of.

We are looking to 1906 Goodrich and expect to be partial to them, because we believe they deserve it if their previous reputation is any criterion to go by."

—*Asheville Cycle and Auto Co.*, Sept. 23, 1905.

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.



Rims branded in the channel with this copyright mark have been ispected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company

Akron, Ohio.

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 909 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 420 Superior St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.



Motor Car Tires

THE MOST SERVICEABLE TIRES MADE

No Internal Heating

The thread fabric construction makes the tire so pliable that it changes position in service with the least possible resistance, which means that the tires are very resilient, fast, and free from internal heating.

No Pinched Tubes

The tire is fitted with a flap, which prevents the tube from coming in contact with the rim, or from getting under the edges of the case, preventing pinched tubes.

No Creeping

The flap forms a strong frictional contact with the edges of the clinches, holding the edges firmly to the rim for its entire circumference, so that it is impossible for the tire to creep.

G&J TIRE CO.

Indianapolis, Ind.

Boston Buffalo Cleveland Detroit Chicago Chicago San Francisco

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THE STANDARD AMERICAN COOLER.

THE WHITLOCK COOLER

was used on the

LOCOMOBILE RACER that finished THIRD in the VANDERBILT CUP RACE.

It was never touched during the race. It did its full duty.
It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Races, also the 1906 Gordon Bennett Race.
Quality and efficiency only figure in an event of this importance.
We make coolers of the HIGHEST EFFICIENCY.
The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS,

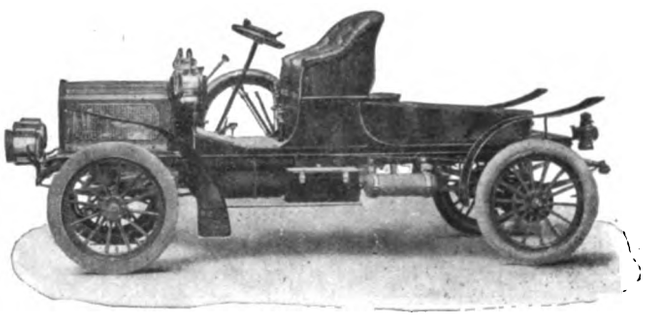
continuously for the seasons of 1903, 1904, 1905, 1906.

THE WHITLOCK COIL PIPE CO.,
Hartford, Conn.

The Incomparable

WHITE

The Car for Service.



THE WHITE RUNABOUT

If seating capacity for two is sufficient for your needs, you would do well to inspect critically the White runabout—our regular chassis fitted with runabout body. It, of course, possesses all those qualities of simplicity, durability and reliability which have made the White the favorite touring car of this country. In addition, is the increased speed which results from the lessened weight. The price, furthermore, is less than that of our touring car. The White runabout should certainly appeal strongly to those who wish a stylish, speedy and silent car.

Write for further details regarding price, weight, etc.

WHITE SEWING MACHINE COMPANY
CLEVELAND, OHIO.

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MICHELIN

TIRES OF THE HIGHEST CLASS

The only stock tires that rode to Victory in the Vanderbilt course without a change.

MICHELIN ROUND TREAD TIRES.
MICHELIN FLAT TREAD TIRES.
MICHELIN ANTI-SKID TIRES.

MICHELIN TIRE AMERICAN AGENCY, Inc.,
6 West 29th Street, New York
Telephone—4657 Madison E. D. WINANS, General Manager

BRANCHES.

Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
Philadelphia, 322 No. Broad Street.
Washington, 1330 New York Ave., N. W.
San Francisco, 307 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street.
Pittsburg, 5903 Centre Avenue.
Utica, 12-18 Lafayette Street.
Poughkeepsie, 14-20 Catherine Street
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
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Morristown, N. J., 1 South Street.

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

ALL SIZES CARRIED IN STOCK.

THINK IT OVER

Harry C. Morris Alfred Wilmarth

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PRIVATE WIRES TO CHICAGO AND MILWAUKEE.

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Stocks, Grain, Cotton and Coffee,
32 Broadway,
New York, July 22nd 1906

Mr. C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.
H. S. M. - G.

Harry S. Morris

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request.

CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

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Parts for 1906 Automobiles:

For the convenience and assistance of automobile builders we have prepared complete drawings of our 1906 model pressed steel frames and frame members, and other parts, which will be mailed upon application. We are prepared to build pressed steel frames, change gears, front and rear axles and other parts in any quantity for early delivery.

STEEL STAMPINGS:

We make a specialty of steel stampings of all descriptions, including hubs, parts, brake drums, etc.

STEERING WHEELS:

Another specialty of ours—we make the best steering wheel rim on the market, and a large variety of spiders for application to any steering column.

Send for our Steering Wheel circular

A. O. SMITH COMPANY

Milwaukee, Wisconsin.

THE

UTILITY AND PRACTICABILITY

of the



HILL LOCK VALVE

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Leading Foreign and Domestic Manufacturers

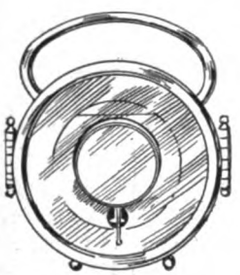
to supply it as a part of

THEIR REGULAR EQUIPMENT

They appreciate that such a device that locks the gasolene supply against thieves and meddlers is insurance of a sort worth providing.

E. HILL, Jr.,

Norwalk Iron Works Co., SOUTH NORWALK, CONN.



The absolute best in Motor Lamps

THIS

SOLAR PARABOLENS HEADLIGHT

throws most powerfnl beam of any lamp made, yet burns cool. Simple, safe ai d sure, no better lamp can be built. The most your dealer will say about the next best is that it is "just as good as a SOLAR"—but why not buy th **standard** and dodge the second best.

We stand back of every SOLAR lamp with a guarantee to **you**—a warran y that leaves no room for risk on the buyer's part. You can't buy better lamps—whether oil or acetylene.

Write for booklet—or ask your supply man.

BADGER BRASS MFG. CO.,
Kenosha, Wis.

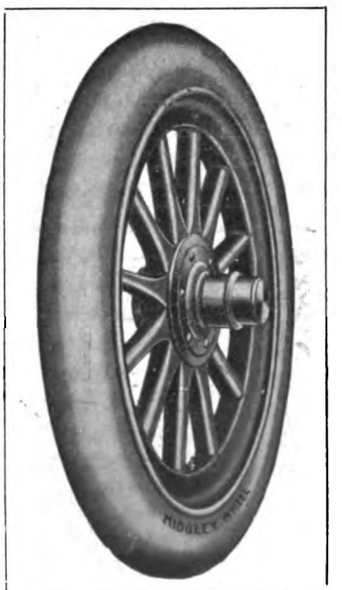
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THE ONLY WHEEL that will always remain absolutely true.

THE ONLY WHEEL that does not require care and attention.

THE ONLY WHEEL that will withstand hard usage, even abuse.

THE ONLY WHEEL that will not shrink, warp or swell, thereby eliminating resetting rims and other annoyances.

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THE MIDGLEY MFG. CO., Columbus, Ohio

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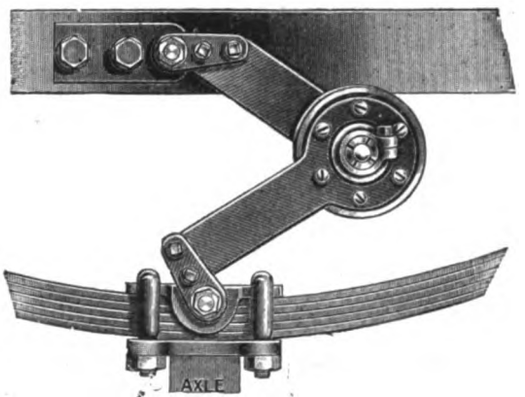
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"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in WILKES-BARRE, PA., will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then . . . . . MATHESON MOTOR CAR CO. Holyoke, Mass.

TRUFFAULT-HARTFORD SUSPENSION



RESULTS OF VANDERBILT ELIMINATION CONTEST

On Long Island Course. Sat., Sept 23, Average Time, Almost 57 Miles per Hour,

The cars of these two leaders were equipped with the TRUFFAULT-HARTFORD SUSPENSIONS, which enabled them to win. Only 59 seconds separated them.

1st. OINGLEY, (Pope-Toledo, 60 H.P.) 2 Hours, 50 Seconds.
2d. TRACY, (Locomobile, 90 H.P.) 2 Hours, 1 Minute, 49 Seconds.

The third car ran 19 minutes behind the leader
AND WAS WITHOUT THE TRUFFAULT-HARTFORD SUSPENSIONS

Racing or Touring, if you want to Finish Among the Leaders Equip Your Car with

THE TRUFFAULT-HARTFORD SHOCK ABSORBER.

Hartford Suspensions Were on All the Winning Cars in These Prominent Contests Recently Held.

Glidden Tour; French Eliminating Trials; Gordon Bennett Race; Ardennes Circuit Race, French; 1,000 Mile Track Record, Guy Vaughn.

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President — 69 Vestry Street, New York City

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Hot and Cold Rolled Hoop, Strip, Sheet and Bar Steel

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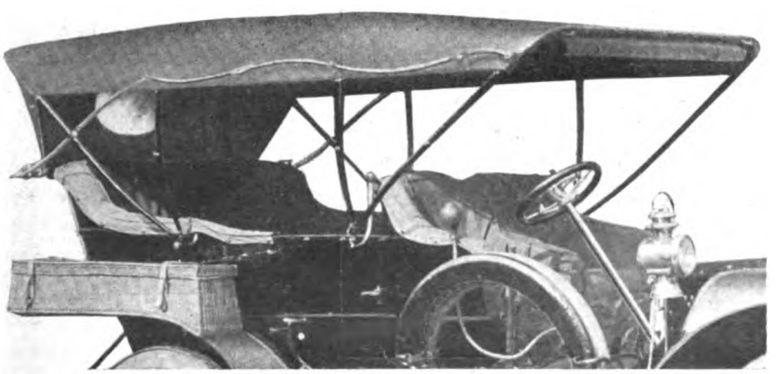
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Special Drawn and Rolled Shapes

DIES, TOOLS and AUTOMATIC MACHINERY. PRESSES and DROPS MADE TO ORDER. WELDING AND BRAZING, NICKEL, BRASS and COPPER PLATING, TINNING, GALVANIZING and JAPANNING

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should be just as carefully designed and fitted as any other parts of the car. **"Any Old Top"** won't do. Equip with the **LONDON TOP** and secure the best that skilled top makers and the best of materials can produce.

LONDON TOPS, made to fit any car, fit guaranteed. Prices' samples of materials and full description of construction promptly mailed on request.

Lamp Covers. ***Slip Covers.***
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Change Tires 30 Seconds Goodyear Universal Rim

SUPPOSING you were 25 miles from home, and your tire exploded. And you hadn't another with you. And when you stopped at the garage, the man said: "I'm sorry, but I haven't a single tire of that make."

Wouldn't it make you mad?

Of course it would, if you had an *ordinary* rim.

But if you had a Goodyear Universal Rim, you would smile and say: "Bring on any old tire, as long as it's a clincher, my rim will take it." And in less than three minutes you would be enjoying the scenery once more.

Because it *isn't* an all day job to take off and put on a tire when your car has Goodyear Universal Rims. Just jack up the wheel and in 30 seconds the old tire is off, and in another 30 seconds the new tire, ANY kind, is on. You need no tools but the hands. And are "fixed up" and on the road while the man with *ordinary* rims is hunting for his crowbars and levers.



Figure 1.

You see the flange comes right off on Goodyear Universal Rims like Fig. 1.

And then a 26-inch tire (for example) slides right on to the 26-inch rim like Fig. 2, as easy as you would put on your hat. On an ordinary rim, you would have to pry that 26-inch tire over a 27-inch flange. You know what a profanity inspiring job that is, and it doesn't do the tire any good either.



Figure 2.

Now this is all there is to taking off and putting on a tire when you have Goodyear Universal Rims. See how simple and easy it is.

The rim is made up of four parts, like Fig. 3.

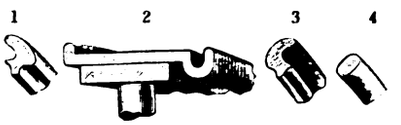


Figure 3.

Nos. 1 and 3 are the removable flanges (rings) which can be adjusted to any clincher tire.

No. 2 is the base of the rim attached to the felloe of the wheel. It can be used without fitting on any standard wheel built for standard clincher rims.

No. 4 is the binding ring which holds the flanges in place.

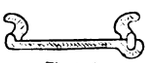


Figure 4.

If you have decided to relieve yourself of all tire troubles and in consequence ride Goodyear Detachable Auto Tires, a section of the rim when put together, would be like Fig. 4.

Or, if you ride an ordinary clincher tire, the rim section would look like Fig. 5.



Figure 5.

The ring which holds the flanges in place is split at a point alongside the valve stem, like Fig. 6.

It can't be removed (and, of course, the tire can't come off) while the flange presses against it. This flange is kept tight against the ring by a plate which slips over the valve stem like Fig. 7.



Figure 6.

When you wish to remove the tire, loosen the nut which holds the valve stem down, and push the stem up through the rim. This pushes up the plate and lets the flange ring slide inward like Fig. 8.



Figure 7.

Then lift out the binding-ring, slip off the flange, and pull off the tire. Time, 15 seconds. No tools but the hands.



Figure 8.

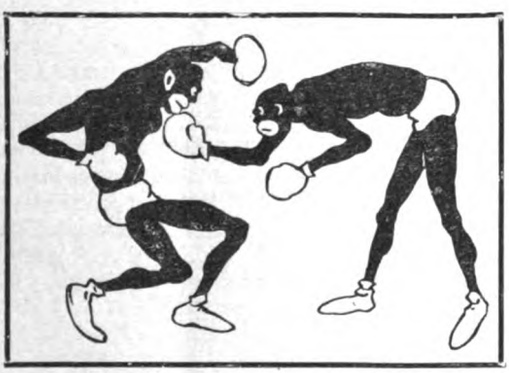
Those who are weary of tire troubles are specifying Goodyear Auto Tires on Universal Rims. This equipment *costs no more* than the ordinary kind, and multiplies the pleasures of motoring many times.

Ask for our "Good News Book" and find out all the good points of the Goodyear Auto Tire and Universal Rim. It's of vital interest to the Manufacturer, Dealer or User who is satisfied with nothing but *the best*.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove Street, Akron, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St., and Detroit, 242 Jefferson Ave.

NO HITTING AND MISSING
when
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They're Champions every time and in all classes.

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Kilgore Automobile Air Cushion

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THE ONLY DEVICE Permitting the use of Flexible Easy Springs on your car and a Good Steady Speed over roads as they come.

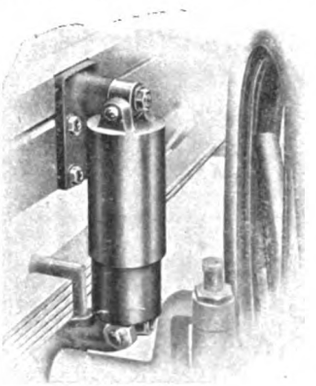
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Bumping Axles,

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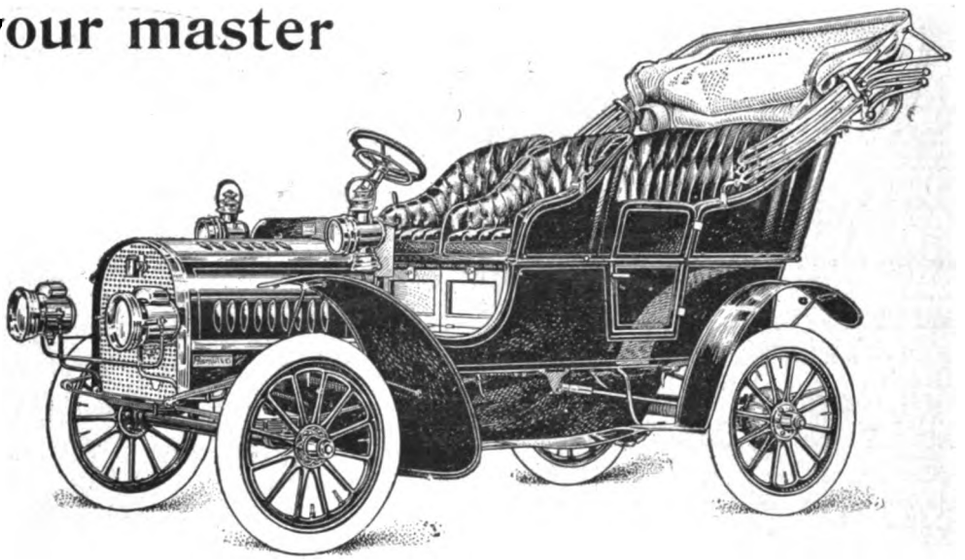
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¶ Unnecessary complication even though of apparant benefit when in perfect order, reverses this condition.

¶ The RAMBLER works for you all the time and everywhere.

¶ It is a car of absolute simplicity and constant service and is adapted to all conditions of road and weather.

¶ Happy owners will verify these statements and you can convince yourself by obtaining a practical road demonstration of this car.

Rambler

Surrey Type One, illustrated above, (without top), complete with lamps, horn, tools, etc., $1200. Cape top $100 extra; canopy top with glass front $100 extra. Ask for a copy of the Rambler Magazine.

THOMAS B. JEFFERY & COMPANY, Kenosha, Wis.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, October 26, 1905. No 5

RECEIVER FOR DE DIETRICH

Affairs of American Branch Are Much Involved —Ownership of 11 Cars in Dispute.

The De Dietrich American branch is the first of the concerns handling imported cars to fall on evil times. It is now in the hands of a receiver, Lindsay Russell, his appointment following the filing of petition in bankruptcy by Baron Adrian De Turckheim, the Garvin Machine Co. and the National Surety Co. The petition alleged that the corporation was involved and had transferred property to creditors whose names were unknown to the petitioners. The liabilities are estimated at $8,000 and the assets at the same figure.

The receivership proceedings are said to be an effort to untangle the ownership of 11 cars now at the De Deitrich branch, 215 West Forty-eighth street, New York. These cars were transferred by bill of sale on May 29 to the branch by Frederick De Turckheim, as owner, after performing this service and also personally assuming a De Deitrich debt, Frederick, who had been head of the De Deitrich interests here, drew his balance from the banks, so it is alleged, and, without heralding the fact from the housetops, took passage for Europe. Some two weeks since, Mr. Russell was appointed receiver of his affairs. Then up spake his brother, the Baron, who claims to be the rightful owner of some of the transferred cars. The receiver is expected to discover "who's who."

The De Dietrich interests first established themselves here in pretentious quarters directly facing the Waldorf-Astoria and later opened a branch in Boston. Afterward they removed to Forty-eighth street and about two months since closed the Boston establishment.

Cadillac o Build on Broadway.

The Cadillac Automobile Co., of New York, also is to leave the congested automobile "colony" and seek the broader portion of Broadway on the other side of Columbus Circle. The fact was made known this week, when Walter C. Martin, president of the company, let the contract for the erection of a fine fireproof building on the corner of Broadway and Sixty-second street, fifty-two feet on the former thoroughfare and seventy-two feet on the latter. It will comprise four stories and basement and will incorporate every modern convenience, including steel elevators. It is expected to be ready for occupancy about February 1 next.

Manufacturer Stearns Seriously Injured.

Frank B. Stearns, president of the F. B. Stearns Co., of Cleveland, Ohio, lies at his home, No. 2,198 Euclid avenue, that city, in a serious condition as the result of a collision with a farm wagon near Willoughby on Wednesday morning of last week. Mr. Stearns and J. G. Sterling, the company's chief mechanic, started from Cleveland Tuesday at midnight for Buffalo, N. Y. Near Willoughby there is a sharp turn in the road, and it was there that the collision occurred. Stearns was thrown out and his spine injured. Dr. L. B. Truslee, who is in attendance, states that although the manufacturer has an excellent chance to pull through, he will be bedridden for two months or more.

Chicago Royal in Trouble.

Involuntary bankruptcy proceedings have been begun against the Royal Automobile Co., 144 Green street, Chicago, Ill. William D. Rockwell, former manager of the company, Algernon R. Rockwell and the Excelsior Supply Co., are the petitioning creditors. Needless to add this Royal concern is in no way related to the well-known Royal Motor Car Co., of Cleveland.

No Receiver for Kaestner.

There will be no receiver appointed for the Charles Kaestner Mfg. Co., South Bend, Ind. The Kaestner people write that the application for one grew out of a disputed account and was made with a view of forcing them into a settlement. When the effort failed they say that the proceedings were discontinued.

Prestolite Interests Change Hands.

The Concentrated Acetylene Co., has been taken over by a new corporation, the Prestolite Company. The business will be continued in Indianapolis.

THE "CORPSE" IN THE CAFE

Or How Selden Sleuths Found a Man Moore Alive Than Dead and Turned a Laugh.

If ever he was dead, W. . Moore has come to life again. The reports of his death that were printed in very many papers some two months ago apparently were to his liking and must have caused him some quiet chuckles; at any rate, Moore did not take the trouble to deny them. It is even alleged that he so thoroughly enjoyed the distinction of being a dead one" that on the occasion of his periodical excursions to New York he masqueraded under an assumed name.

Moore is the wealthy young New Yorker given to money ignition against whom the sponsors for the Selden patent secured an injunction for violation of their rights in that he had purchased and used an unlicensed imported car. When the news of the injunction was made public, the agents for the car involved promptly gave out that Moore literally was a dead one—that he had become a cold, clammy corpse while visiting in Texas.

The idea of obtaining an injunction against a corpse was so rich that a great laugh went up and a deal of fun and derision, if not contempt, was leveled at the Association of Licensed Automobile Manufacturers. They did not join in the laugh, in fact, it "rubbed them the wrong way" and roused their "dander." They refused to believe that Moore was "beneath the Texas daisies."

Sleuths, minus gum shoes, were engaged and without a very extensive search of gravestones, they soon learned that the young man was very much Moore alive than dead. But there was something of the flea in his make up. He hopped about in lively fashion but it is officially announced that on Thursday night last in Albany, N. Y., the supposed corpse was uncovered and the Selden injunction thrust into his hand by a United States deputy marshal of the name W. C. Irving.

The announcement is very circumstantial. It gives the exact hour and place of ser-

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vice. It was 10.40 p. m. by the clock and Moore at the time was in a place of the kind for which he is alleged to have a fondness—the thirst parlor of the Ten Eyck hotel. It is added that although "taken completely aback," he accepted the situation "with the best face possible." The sort of face a man who had been content to be considered a stiff corpse can present under such circumstances is not easily pictured. However that may be, the A. L. A. M. believe that it is now their turn to laugh.

In the Retail World.

M. B. Ring is building a garage on Chestnut street, Norwalk, Conn.

Horace Sague & Son will start in business on Church street, Poughkeepsie, N. Y., on January 1. They have taken the agency for a foreign car.

Eichorn & Black, who have conducted a garage at No. 5 Marshall street, Newark, N. J., this week moved into their new quarters at Nos. 9 and 11 Hill street.

Having observed the direction of the wind, the Antler Stables Co., of Toledo, Ohio., has changed its name to the Antler Stable & Garage Co. and doubled its capital stock, from $25,000 to $50,000.

W. W. Osborn has been elected president of the Zent Automobile Co., of Bellfontaine, Ohio, to succeed O. E. Yoder, who resigned. The Zent company is expecting to move to Graff or Lancaster, Ohio.

The Automobile Co., La Porte, Ind., through its president, William N. Rumel, has sold its plant at Michigan avenue and Washington street. W. N. Rumley and Charles N. W. Walsh are the purchasers.

The Quincy Automobile Co., of Quincy, Ill., which was recently organized to conduct a general garage business, is erecting a two story brick building on Fourth street. The White steam car will be exploited by the company.

Amandee V. Reyburn, Jr., has purchased a lot in Delmar avenue, St. Louis, Mo., 100x150 feet, upon which he will erect a two story brick garage to surpass any in the Missouri city. It will cost, approximately, $35,000.

The Southern Automobile Co., of Nashville, Tenn., has closed a deal whereby it acquires the spacious building on Broad street formerly used as an amusement hall. Extensive repairs will be made before the company moves into its new garage.

J. Arthur Ketchum will erect a $25,000 garage on the so-called Bockes lot, South Broadway, Saratoga Springs, N. Y. The building will be of brick and concrete construction, fireproof throughout, 100x150 feet in dimensions, and will have an entire plate glass front.

The H. T. Hearsey Vehicle Co., Indianapolis, Ind., expect to take possession of their new garage on the 1st inst. The building, which adjoins the Hearsey salesrooms, is 50 by 150 feet, is equipped with the most modern facilities and will be kept open night and day.

The Week's Incorporations.

Jackson, Mich.—E. C. Clark Motor Co., under Michigan laws, with $15,000 capital. Corporators not named.

Augusta, Me.—Diezeman Shock Absorber Co., under Maine laws, with $200,000 capital. President and treasurer, I. L. Fairbanks.

Guthrie, Okla.—Automobile Tire Repair Co., under Oklahoma laws, with $10,000 capital. Corporators—William F. Maloney and Robert A. Wells.

Kansas City, Mo.—Kansas City Motor Car Co., under Missouri laws, with $150,000 capital, all paid. Corporators—J. E. Caps, F. E. Wear and George K. Wheeler.

New York City, N. Y.—Columbus Auto Exchange & Storage Co., under New York laws, with $1,000 capital. Corporators—Max Brown, Louis Brown and S. Brown.

Guthrie, Okla.—Southwestern Transit Co., under Oklahoma laws, with $35,000 capital; to operate automobile stage line. Corporators—Ernest R. Ames and Shirley A. Bradish.

Norwalk, Conn.—The Norwalk Touring Co., under Connecticut laws, with $25,000 capital, $5,100 paid in. Corporators—Richard H. Golden, Edward F. Smith and Ellis E. Howard.

Boston, Mass.—Tudor Farm Motor Car Club Co., under Massachusetts laws, with $15,000 capital. Corporators and officers—Dorsey L. Greene, president; Emil Eames, treasurer.

Newark, N. J.—Turbine Locomotive & Car Co., under New Jersey laws, with $500,000 capital; to manufacture motor vehicles. Corporators—Stacey Wilson, Robert J. Keith and Albert G. Mabee.

Boston, Mass.—Technical Automobile School of New England, Inc., under Massachusetts laws, with $5,000 capital. Corporators—Charles M. Parker, Harry M. Huse and George M. Faulkner.

Boston, Mass.—The Gregory-Waite Co., under Massachusetts laws, with $5,000 capital; to deal in oils, lubricants, etc. Corporators—George William Waite, Frederick W. Gregory and Frank B. Walsh.

Dowagiac, Mich.—The Lee & Porter Mfg. Co., under Michigan laws, with $200,000 capital, $175,000 paid in; to make automobiles. Corporators—S. E. Lee, H. H. Porter, J. S. McCleary, J. O. Beecraft and W. C. Porter.

Atlantic City, N. J.—Automobile Speedway Co. of New Jersey, under New Jersey laws, with $100,000 capital. Corporators—George Mason Waters, George P. Rogers, A. M. Bowling, William Pinkney Whyte, Jr., and Louis B. Dailey.

Kansas City, Mo.—Strang Electric-Gasolene Car Co., under Missouri laws, with $100,000 capital; to manufacture automobiles. Corporators—Albert F. Hurt, Jr., Stephen J. Hayde, Frederick O'Flaherty and Hilda B. Holmgren.

New York, City, N. Y.—Thirty-Five Per Cent Automobile Supply Co., under New York laws, with $40,000 capital; to manufacture automobile supplies. Corporators—James C. Nichols, Harry K. Nichols and Albert B. Norwalk.

New York City, N. Y.—The Royal Battery Co., under New York laws, with $5,000 capital; to manufacture storage and dry batteries. Corporators—Emil Grossman, Carl Kaufman, Alfred Lowenstein, Julius Silverman and Hugo Grensback.

San Francisco, Cal.—San Francisco Automobile Co., under California laws, with $100,000 capital. Corporators—Charles A. D'Arcy, Henry E. Scharlach, William S. Hackett, Julian H. Voorsanger, Arthur A. Swan, E. A. Sharlach and Charles C. Grotheer.

New York City, N. Y.—Hutchinson Electric Horn Co., under New York laws, with $20,000 capital; to make electric horns for automobiles and to make horseless vehicles. Corporators—Paul M. Pierson, Miller Reese Hutchinson and William M. Williams.

Detroit, Mich.—The Maxwell-Briscoe-McLeod Co., under Michigan laws, with $10,000 capital; to make automobiles. Corporators—Alexander I. McLeod, Benjamin Briscoe, James Danaher, E. J. Corbett, Frank Filer, James E. Danaher and George F. Monaghan.

Detroit, Mich.—Motorcar Co., under Michigan laws, with $150,000 capital; to make friction driven automobiles. Corporators and officers—Frank Caughey, president; Fred. Postas, first vice-president; Byron J. Carter, second vice-president; Randall A. Palmer, secretary; Henry A. Radford, treasurer.

Disputing Dealers Go to Law.

Differences of opinion concerning the management of the business of a Sacramento (Cal.) firm have led the three members into the courts for settlement. W. C. Wing has brought suit against his partners, L. E. Moeller and J. G. Patterson, for an accounting and has applied for a receiver.

Wing alleges that the firm was formed with the understanding that it should continue until the partners should disagree. The defendant, Patterson, he affirms, was taken into partnership in June, 1905, and it was understood that the three were to share alike in the profits and losses. Wing affirms that he invested $3,250 and that Patterson put up $2,000, while Moeller contributed his experience. It is complained that Moeller failed to abide by the terms of the agreement; that he failed to account to his partners for money received and collected, and that he used the property of the concern for his own pleasure and benefit without recompense to the company.

Co-operative Garage in Texas.

Down at Fort Worth, in the Lone Star State, a co-operative club and garage will soon be incorporated by automobile owners in that city. As yet no name has been selected for the club-garage, but these officers were chosen: President, M. R. Sanguinet; vice-president, A. B. Wharton; secretary, C. D. Reimers; treasurer, F. R. Hedrick.

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JUDGE REVERSES HIMSELF

Wgs in a Hurry to Leave Town and as a Result Winton Gets a Retrial.

Supreme Court Justice Keogh in a memorandum handed down last week reversed himself in the suit of Daniel R. Chichester against the Winton Motor Carriage Co. and the latter will now have an opportunity to again present their case to the New York tribunal.

This suit involved the ownership of three automobiles and it came on for trial before Justice Keogh on March 27, the jury returning a verdict for the plaintiff. On the ground that neither the justice nor the jury were present when the verdict was opened and read, although it is claimed counsel for both sides had agreed to their absence, Charles Thaddeus Terry, of 167 Broadway, New York City, moved that the verdict be set aside and a new trial granted.

The suit in itself is an interesting one. Chichester, the plaintiff, entered into a contract with the Winton Motor Carriage Co., by which, in consideration of receiving three of the company's four-cylinder cars, he agreed to give said company $8,500 worth of advertising in newspapers, passenger cars and magazines. After $1,460 worth of advertising had been supplied by Chichester, the defendant company deposed "that the defendant being urged thereto by the plaintiff and having at that time not yet begun to distrust him, allowed plaintiff to take away and use or dispose of as he saw fit two of the said automobiles. When Chichester brought suit to get possession of the third machine which defendant declared plaintiff was not entitled to, inasmuch as he had not given the full quota of the agreed upon advertising and the machine was still in their garage.

The suit came up for trial before Justice Keogh and was completed Friday afternoon, March 27. Justice Keogh told the counsel on both sides that he was very anxious to take a train out of town and asked if they would agree to the sealed verdict to be opened by the clerk of the court without the presence of the justice and jury. It is said counsel agreed and on the following morning a sealed verdict for the plaintiff was opened by the clerk in the presence of the counsel and entered on the minutes of the court.

In his memorandum setting aside the verdict and granting a new trial, Justice Keogh says: "Defendant asks to set aside the verdict on the ground that, notwithstanding stipulation of counsel, the clerk had no power to receive and record the verdict in the absence of the presiding justice and jury. I am compelled by a decision of the Appellate Division in Morris vs. Harberger, 91, N. Y. Supp. 409, to grant this motion. I will sign an order putting the case at the head of the calendar for the first Monday in November."

Olds Interests in Boston Change Hands.

The Olds interests in Boston have been taken over by a new organization, the Adams-Sutton Motor Co., incorporated with a capital stock of $40,000.

The president and manager of the company is Walter O. Adams, the former general manager of the Crest Mfg. Co., of Cambridge, Mass., later assistant sales manager of the Ford Motor Co., of Detroit. In taking up the new connection he resigns his position with the Olds Motor Works, of Lansing, as their foreign agency director. David Sutton, the secretary-treasurer, comes from a responsible position with the Canadian Bridge Co., of Walkerville, Ont., returning to Boston, where he resided a number of years. The company will occupy spacious quarters in the new Motor Mart in Park Square, and will be ready to show the new Oldsmobile cars during the latter part of November. The exploitations of the Oldsmobile commercial cars will be given special attention, Mr. Adams having this department under his personal direction.

More Room for Marmons.

The Nordkye & Marmon Co., Indianapolis Ind., manufacturers of the Marmon car, have nearing completion an immense steel frame building to provide facilities for the increasing demands of its automobile department. This structure is 104x340 feet, and while designed for a foundry, is to be used at first exclusively for automobile work. It is of sawtooth roof, 62 feet high, and well lighted on all sides.

The principal business of the Nordyke & Marmon Co. is the manufacture of mill machinery, of which it is one of the largest in this country, but increasing attention is being paid to the construction of its Marmon car, which possesses a number of distinct and advanced features and the demand for which is in keeping with the times. The car is built complete in the company's factory, cylinders and engines being cast and ground in its shops. The upper part of the tonneau is made of aluminum in one piece, and is one of the largest single castings of aluminum made for any purpose.

Buchanan to Have a Factory.

The Lee & Porter Mfg. Co. has been incorporated at Dowagiac, Mich., with $200,000 capital, to manufacture automobiles, and, although the business office of the company will be at Dowagiac, a plant will be erected at Buchanan. The officers of the new concern are: President, S. E. Lee; vice-president, H. H. Porter; directors, the officers, J. S. McCleary, J. O. Beecraft and W. C. Porter.

Buick Files Million Dollar Certificate.

The Buick Motor Co., Flint, Mich., has doubled its capital—from $500,000 to $1,000,000. The necessary certificate has been filed with the Michigan authorities.

TO MAKE CHROME STEEL FRAMES

Parish to Re-enter the Trade with the Backing of Powerful Steel Interests.

What probably will be styled the N. E. Parish Mfg. Co. is now in process of organization. It is definitely known that Neff E. Parish, organizer and former head of the Parish & Bingham Co., of Cleveland, will be its general manager and that in all probability the company will take his name. Of even more significant interest is the fact that R. E. Jennings, president of the powerful Carpenter Steel Co., Reading, Pa., will be president also of the Parish Co.

Their immediate purpose is the manufacture automobile frames of the new pressed nickel chrome, oil tempered steel developed by the Carpenter Co., and which in other parts is so emphatically answering the trying demands of automobile use. This steel, it is asserted, affords a saving of almost one-half of the present weight, and increases the strength about three times over the frames now being used in even the very best cars. It is claimed that these frames can be produced in a manner so that they will show practically 200,000 lbs tensile strength per square inch as compared with 50,000 to 60,000 lbs. per square inch, which is being reached in steel now being used.

Mr. Parish is, of course, well-known to the trade and knows the business from the ground up. He will have as superintendent of the new company, Mr. Gartshore, former superintendent of the Parish & Bingham Co., and several other of his old associates. Mr. Jennings is such a commanding figure in the steel industry that his identification with the new concern will give it immediate and general recognition. It is probable that the frame plant will be located in close proximity to the Carpenter Steel Co.

One More in Detroit.

Detroit's numerous colony is to have still another addition—the American Electro-Mobile Co., in which Eastern capital is said to be involved. W. A. Woodrow, president of the Old Dominion Steamship Co., holds a similar position in the Electro-Mobile Co.; Frank P. Rae, formerly associated with Edison, is its engineer, and C. W. Beaumont is secretary-treasurer. The exact location of the plant has not yet been decided upon. The Electro-Mobile company asserts that its car will be operated with storage batteries which will enable it to run 125 miles without recharge.

Crawford Incseases His Capital.

To give a larger working fund, the capital stock of the Crawford Automobile Co., of Hagerstown, Md., has been increased from $50,000 to $100,000. With the fresh capital the company will erect a three story addition to its plant.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident-Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintenance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 754-756 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 828 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 423 So. Clinton St.
BUFFALO, 868 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS, 3906 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1530 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1064 So. Main St.

DEALERS

During 1905, we built and sold more than 4,000 Cadillac Cars. Not one purchaser of these cars is now willing to let his "bargain" go at less than the price he paid for it.

FOR 1906 THE NAME

CADILLAC

will possess more than ever before a magic meaning to live dealers.

There are hundreds of towns in the United States where Cadillac Cars have never been sold. We want an agent in each of these localities and if you are a good business man you will at once get in touch with us. No line was ever so attractive as ours will be for 1906.

Write us to-day

CADILLAC AUTOMOBILE CO., Detroit, Mich.

Member of the Association of Licensed Automobile Manufacturers.

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THE MOTOR WORLD

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To Facilitate Matters Our Patrons Should Address us at P. O. Box 649.

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NEW YORK, OCTOBER 26, 1905.

The Vote for Road Improvement.

In all the heat and flubdub preceding the election in New York which occurs on November 7, next, little or nothing is being said of the proposal that the State shall bond itself for $50,000,000, at the rate of $5,000,0000 for ten years, for the construction of improved highways. That proposal will, however, come up for the approval or rejection of the voters and no man who has to do with automobiles in any way, shape or form should permit it to escape his favorable action. It is difficult to see how any of them can do so.

The health and future of the automobile industry and the improvement of the common roads are so very intimately related that none who looks far beyond his nose and who is possessed of a spark of real interest will stop at voting for the much-desired amendment; he will go out of his way to urge all with whom he may come in contact to do likewise. It is the duty of all automobilists to do so—a duty that is made imperative in the case of those engaged in the trade. Those in authority should take sufficient interest in the matter to lend a hand in this direction. Every mile of improved road means the sale of more automobiles and the increased comfort and pleasure of those who use them.

New York State already has bonded itself for more than twice fifty millions for the improvement of the canals—an improvement of direct benefit to a comparatively few persons. The matter of road reform is one that comes straight home and is actually felt and shared by every man, woman and child personally.

The defeat of the amendment will be in the nature of a calamity—of a stay to progress.

Reducing the Shocks.

It would appear that some designers have come to the conclusion that the millennium, in the form of a perfected suspension, is not to be reached by working on and improving the present devices, nor, on the other hand, in discarding them altogether in favor of something entirely different, but in retaining the current system just as it is and adding a device here, another there and still others in various parts of the car until there is danger of the original suspension being lost sight of under its burden of auxiliary devices. Not that they are uncalled for—quite the reverse is the case—were the suspension of the car equal to the demands upon it as originally designed no need of adding to it would be felt. Much of the success of the many auxiliary spring devices is to be accounted for from this circumstance—their presence is a necessity on a large number of cars on the market.

Before the present recognized standards of power and speed were reached suspension was a matter of subordinate importance for more than one reason. In the first place, the designer was far too busy with the motive power of the cars to pay much attention to it, and second, with the low powers, and consequently low speeds then general, stock springs from manufacturers whose specialty was supplying the suspension needs of wagons and carriages sufficed. No shortcomings were apparent in the capacity of the suspension, for the load imposed upon it; its limit had not yet been reached or exceeded, and the springs accordingly showed no signs of weakness. Moreover, great reliance was placed on the springing effect of the tires, and between the two there was little fault to find with the result. But neither springs nor tire sizes have kept pace with increasing weight and power, so that in many instances a point has been reached where the load imposed on both has been excessive, whether standing or running. Hence something in the shape of an auxiliary made its need felt, and as the car was in the owner's hands by this time this had to take the form of something, not alone readily applicable without modifying the construction, but also reasonably low in price—a state of affairs that has made the marketing of several devices to fill this need an easy matter. That their advent upon the market was most opportune is patent from the widespread demand that has sprung up. Their success has been merited, and the favorable reception they have been accorded thus far will probably continue for some time to come—at least until something better appears, of which there is at present slight prospect on the horizon.

Refinements of Driving.

Driving has become more of a science in the last few years than was possible before the introduction of refinements that have come during that time. With the brake and clutch interconnected car that was also minus a throttle, there was nothing to do but release the clutch and apply the brake whenever it was necessary to slow up, regardless of the slight measure of retardation that might be desired, such as for rounding corners While there was no throttle as now understood, it was, of course, possible to switch off the current and so retard the speed, but this was more than likely to result in an explosion in the muffler, to the detriment of the latter as well as other parts of the exhaust piping when the motor was restarted with the spark. It, moreover, started the engine with a more or less severe jolt that was transmitted to every part of the mechanism.

But since the addition of a throttle similar in many respects to that common in steam practice, and which may be used in much the same manner, together with the discarding of the old method of interconnecting the clutch and pedal brake, a much better form of control is possible, which, when skilfully used, results in extremely smooth running, both on the level and downhill. This is commonly termed "braking with the engine," and simply consists in shutting off the fuel supply temporarily and permitting the compression to act as a retarding agent instead of the brake. It is a particularly efficacious

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method of keeping the speed within bounds when descending hills without having to resort to the intermittent use of the pedal brake, which is destructive of tires, not to speak of the strain imposed upon other parts of the car. The spark may also be used to effect the same purpose, but it is still open to the objections that made its use inadvisable in earlier days. This method is not susceptible of variation, as is possible with the throttle; the spark is either on or off, it is all one or the other; there is no gradual opening up, which results in the engine picking up again smoothly instead of restarting its power strokes with a jerk.

Of course, there is more to it than simply shutting and opening the throttle; there is that indefinable something so aptly termed the "knack" or "hang of the thing" that must be mastered, and doubtless this in turn means something a little different in the case of each particular car; like locomotives, no two are exactly the same. Probably a little practice is the only essential required to acquire this, and the chief thing to be guarded against is too great a drop in the speed before reapplying the power. For instance, if in descending a hill this is not done until after the car has passed off the down grade and began to slow up on the other side, there will be more or less of a jerk, which will be directly proportionate to the difference between the speed of the car and that at which the engine is restarted. If, on the other hand, before the end of the grade is reached, and while the engine is still maintaining a good rate of speed, the throttle is opened gently, the cylinders will begin to fire at a rate somewhat slower, or at most only slightly in excess of that at which the engine is then turning, and the transition from coasting to running will be so gradual as to be scarcely noticeable. This method is naturally not intended to be used in bringing the car to a stop; in such cases the clutch should invariably be withdrawn, but it will be found conducive to smooth running on give and take roads, as well as in traffic and for rounding corners, while the effect of the enforced rest given the pedal brake will be noticeable on the life of the tires.

There has been a question raised as to the effect on the motor from long continued following of this practice, but a little consideration of the subject will make it apparent even to the veriest tyro that under such conditions the cylinders are not being subjected to the same strain that is present when they are firing. It is not the same thing as reversing a steam engine and opening the throttle while still at speed, a trick that occasionally results in the loss of a cylinder head. Nothing opposes the travel of the piston but the air in the cylinder, which proves a further benefit by scavenging it clear of all burned gases.

The Matter of Bodies.

To the casual observer, the manner in which history is constantly repeating itself in the matter of body design cannot but prove a matter of interest. Not simply are the older and more common forms of body which have served their purpose in the era of animal traction still used as they have been used ever since the horseless carriage came to be a factor of interest in the world, but, seemingly, they are growing more and more common as time goes on. Instead of the body builders of the day branching out into new and untried fields, they are sticking to the forms which have already proven their worth, and are confining their efforts toward advancement to the perfecting of details and the addition of new and luxurious comfort-giving devices to the types which are a fixture.

For instance, the tonneau body, which was decidedly an innovation in its way, is fast becoming extinct, while its place is being taken by the side entrance type, with its rear portion partaking somewhat of the tonneau shape, and still yclept "tonneau," but yet in reality having about it far more of the old time surrey than tonneau. So, too, it is with the closed cars. The true limousine, with its rear door and herdicklike appearance, is yielding its place to the brougham and landaulet, while the limousines, so-called, are more of the nature of extension broughams, with the extension behind instead of in front of the door, than the limousines as they were known a year or two ago.

In small car design the same thing is to be seen. The runabout still looks more or less like a buggy minus the horse; or else, in the newer form of touring runabout, its semblance is that of the large car, and the similarity to the surrey of old is even more noticeable than in its prototype. The detachable tonneau has departed—it was not quite to the purpose—and in its place has come the interchangeable body for the large car and the folding seat for the runabout. And this latter, which is to be something of an innovation with certain of the 1906 cars, which has always held its place in certain others and which seems likely always to remain, is nothing more than the old jump-seat buggy idea brought up to date.

To some this is a source of untold anguish. They want to forget the horse and all things which remind one of the horse. Others bow to the inevitable. It is not a matter for designers and engineers to decide, this question of body design, after all; it is to them to furnish the power plant and the chassis and the charm which makes them "go." But when it comes to the body milord the buyer knows what he wants, and milady his wife knows, too, what is required; and, after all, the engineer must give up his pet idea and stow away the old body, be it patterned after a tub or fashioned on the lines of a sea shell, and give the people what they want and what they have become accustomed to seeing.

Akin to a Resurrection Day.

What has become of the thousands of rear entrance cars of all kinds of shapes that were turned out previous to the year 1904? The question is one that is frequently asked, but seldom has it received a better answer than a sight of the practically endless line of cars that strung out from the Long Island Railroad ferry at Thirty-fourth street, New York, all the way to the grandstand at Mineola in an unbroken file before sun up on the morning of the Vanderbilt Cup race.

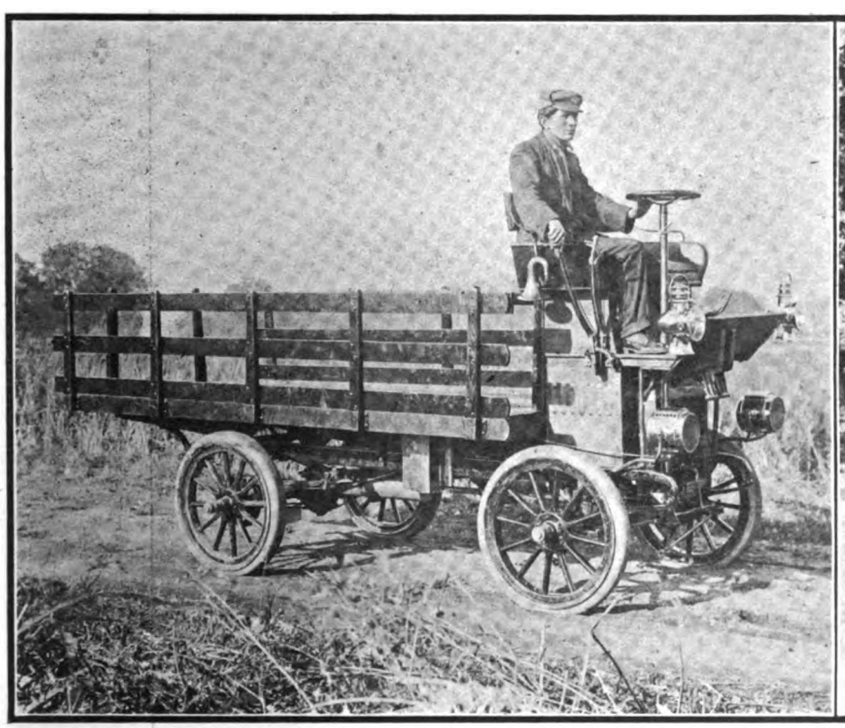
None but those who had watched the evolution of the car during the metamorphosis through which body design has passed in half a decade were competent to identify many of the archaic specimens that were believed to have long since found a quiet resting place in the far beyond of all good automobiles, or had been banished to the depth of the rural districts. The "heavy coughers" of the vintage of 1901 and 1902 ran side by side with the silent running, high powered models of the present year that so completely overshadowed their predecessors, but it was a noticeable fact that the oldtimers got along under their own power without any difficulty, and, while they were lacking in speed, they "got there just the same," and few were left stranded by the wayside. The seven ages of the automobile were prominently in evidence wherever one looked—from the little "teakettle" of 1900 to the latest 60 horsepower 1906 model touring car, all degrees of age, size and length of servitude were well represented, and together formed a sight long to be remembered.

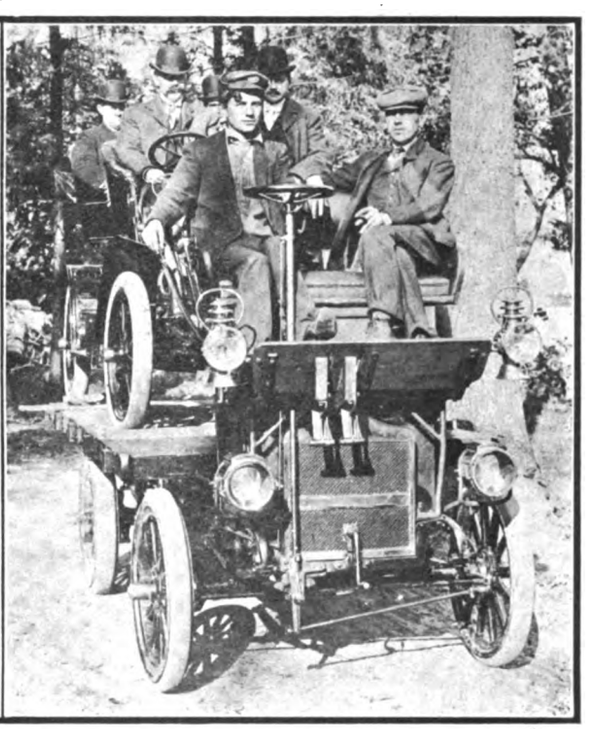
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FIRST MAXWELL TRUCK

Tarrytown's Big Concerns Begins the Building of Business Vehicles—Features of Them.

The Maxwell truck has entered the realm of commercial vehicles. The first that was known of it, or at any rate, the first that was seen of it, was on the occasion of the Vanderbilt Cup race, when the truck appeared on the Long Island course carrying a number of the employes of the Maxwell-Briscoe Motor Company, Tarrytown, N. Y., by whom, of course, it was designed and built. The truck is of 18 horsepower and as far as possible incorporates the same features as the Maxwell touring car, thus rendering it possible to readily obtain parts for replacement.





It is built very high in front, giving a great deal of space for cargo, and with all tanks full weighs 2,600 pounds. The company will engage extensively in the construction and sale of these trucks.

The gasolene motor is of the double opposed type, 5x5½ inches and is rated at 18 horsepower at 1,000 revolutions per minute. Both inlet and exhaust valves are mechanically operated. A special feature of the engine is that by loosening six bolts, the valve motion case can be lifted from the engine case on which it rests, thus rendering accessible the connecting rods and the wrist pin. The crank and transmission case is hung at three points, following the principle of Maxwell three-point suspension.

The engine and transmission case are of aluminum casting, insuring a rigid construction and making it impossible for the gears or shafts to get out of alignment.

The transmission is of the sliding gear type, employing three speeds forward and one reverse, with a maximum speed of eighteen miles per hour. All gears are drop forgings, after which they are cut and hardened.

The bearings in the engine case are bronze shelled, babbit lined. Those in the transmission case are of the plain babbited construction. A feature in connection with the engine is that any wear occurring on the engine bearings can be taken up and bearings adjusted without removing either the transmission or the engine case covers, the adjustments being controlled by set screws located at the bottom of the engine case. The adjustment of main bearings has heretofore been regarded as a laborious undertaking, but by this arrangement it is possible to readily compensate for wear, making it a particularly desirable acquisition in a truck.

The ignition is by jump-spark, the source of current being two sets of dry batteries.

The rear axle and drive shaft have been thoroughly tested out and have proven their efficiency on the Maxwell touring cars and tourabouts, though the axles on the truck are made proportionately heavier.

The drive shaft employs two universal joints, having ample facilities for holding grease. The rear axle is provided with the Hyatt roller bearing, no balls being used in the construction. The side thrust inherent to the bevel gear construction is taken up by a blank roller of the same size of drive pinion. This being fitted against the smooth bevel surface of drive gear, holds the latter up to its work, making it impossible for it to get out of alignment. All metal parts are positively oiled by sight feed compression oilers.

The clutch is of the multiple disc type, these being held in engagement by a powerful spring. The construction of this clutch makes it impossible to strain the mechanism by too sudden engagement. The gears are also provided with a suitable lock, making stripping due to carelessness of operation practically impossible.

The body is of wood provided with suitable sides. The springs have been carefully designed and are amply proportioned. The wheels are 32x4 rear, and 32x3½ front, Firestone solid tires being used.

The floor space is 10½ feet by 6 feet wide. The normal working load is one and one-half tons, with a maximum of two tons.

To Make Fire Engines.

The International Power Company has taken over the Amoskeag Fire Engine Co., of Manchester, N. H., and it is stated will use the plant for the manufacture of automobile fire engines, a number of which already had been produced. D. A. Burt, formerly manager of the La France Fire Engine Co., has been made manager of the Power company.

To Introduce a Dutch Car.

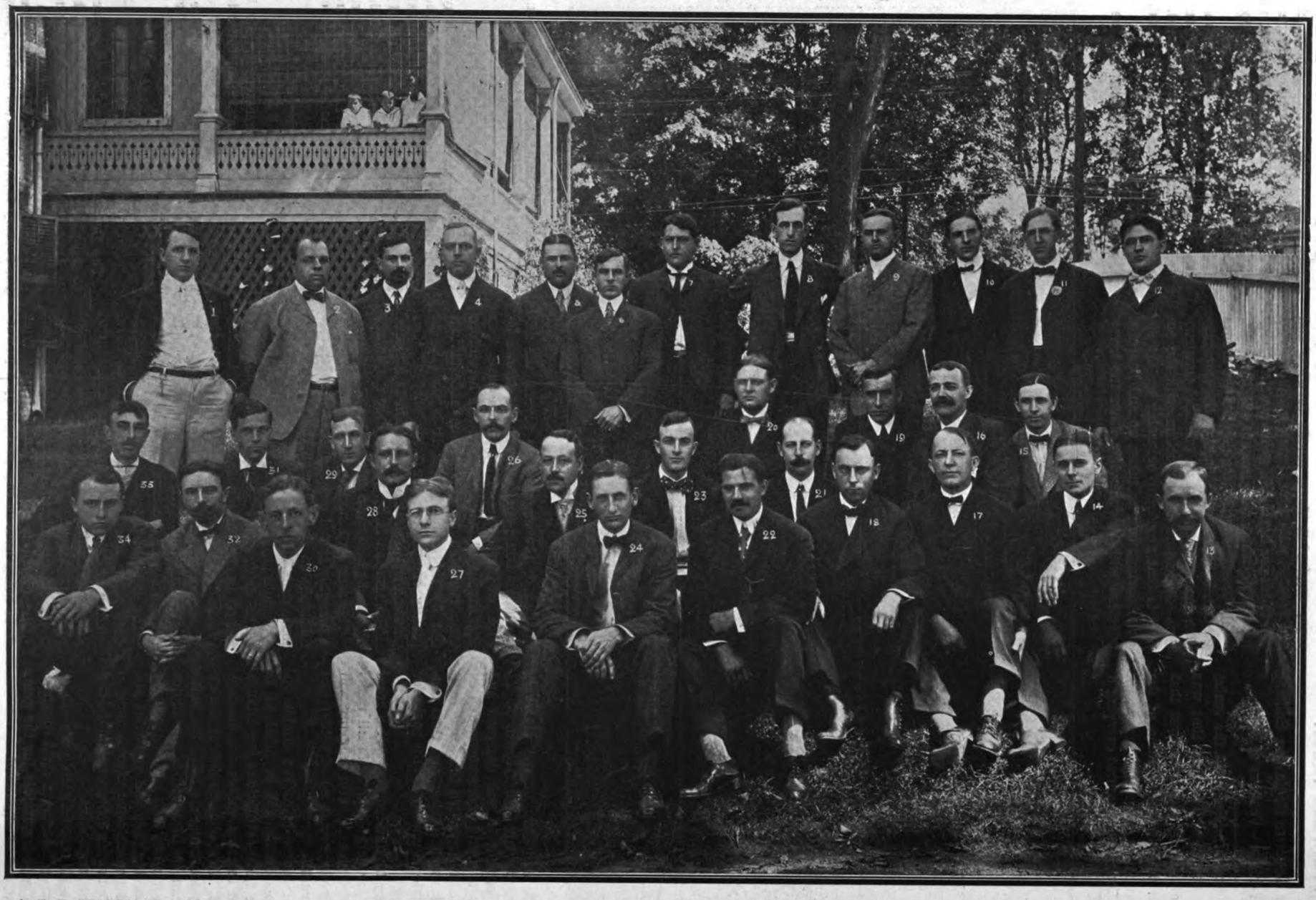
Sidney S. Dixon, representing the Dutch firm of Spyker Brothers, is en route to this country with a view of seeking an American connection for the Spyker car, the dustlessness of which is a conspicuous feature. Mr. Dixon will stop at the St. Regis while in New York.

Doris Will Begin Nov. 21.

The Dorris Motor Car Co., who succeeded to the plant in St. Louis left vacant by the St. Louis Motor Car Co., when the latter removed to Peoria, Ill., expect to begin operations on November 1. The Dorris lease of the factory is for a period of five years.

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Fisk Rubber Company's Staff Grouped at Chicopee Falls.



1—E. H. BRANDT, Special Representative.
2—E. H. BROADWELL, Vice-President.
3—J. W. BOWMAN, New York Manager.
4—B. H. PRATT, Chicago Manager.
5—J. H. CODY, Ohio Salesman.
6—J. W. MEIXELL, Southern Salesman.
7—F. C. VAN DERHOFF, Buffalo Manager.
8—G. E. JOHNSON, San Francisco Manager.
9—B. PARKER, Assistant to General Manager.
10—W. W. WHITING, Philadelphia Manager.
11—E. BOGARDUS, Cashier.
12—L. BEERS, Manager Order Department.
13—A. G. BOLSTER, Superintendent of Repairs.
14—[illegible] MEIXELL, Western Salesman.
15—L. C. MOSHER, Manager Repair Department.
16—F. H. AYERS, Northeastern Salesman.
17—W. C. MAYVILLE, Atlanta Manager.
18—F. E. SMITH, Minneapolis Manager.
19—W. JAMISON, Assistant Superintendent.
20—H. SMITH, Second Assistant Superintendent.
21—A. N. STANLEY, Springfield Manager.
22—F. C. RIGGS, Vice-President.
23—H. S. MASON, Los Angeles Manager.
24—J. C. COLE, Superintendent.
25—GEORGE CAMPBELL, Boston Manager.
26—H. H. HOFFMAN, Syracuse Manager.
27—H. T. DUNN, President.
28—E. NOBLES, Boston Salesman.
29—J. BRELESFORD, San Francisco Salesman.
30—H. G. FISK, Secretary.
31—M. L. BROWN, New York Salesman.
32—R. BELT, Kansas City Manager.
33—M. PENROSE, Cleveland Manager.
34—WILLIAM LAMBE, Detroit Manager.

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LOOKING DOWN ON THE RACE

How the Contest for the Vanderbilt Cup Impressed and Affected the Man "Up Aloft."

It does not seem possible that a few feet—and those few vertically in the air—could make such a difference, but, looking down from the roof of the press stand upon a flying streak of dun colored noise that flashed between two lanes of eager faces was to experience a totally different sensation than that felt by seeing the same machine and the same men hurtle by when on the ground. It was something akin to the difference in looking at people from the street level and gazing down upon them from the top of a tall building, except that the shorter distance made possible the observance of every detail. Add to this the fact that the observer was at the same time the photographer, and a further distinction must be made for the keenness of the professional picture-taking eye for pose and detail, which must also be taken into consideration. Then, again, it was a point of vantage that offered a view of the car from within a moment or two of the time the bugler sounded his warning of its coming, until growing larger with each fraction of a second it had breasted the grandstand, shot past and almost in the same breath disappeared down the seemingly endless line of human faces that stretched out in a well defined lane of humanity-inclosed, oiled road toward the Jericho turn.

But it was the sight of the cars as they passed through the walled-in stretch represented by the press and grandstand that was well worth the climb to the height afforded by the roof of the former. Once the busy spell occasioned by trying to record the spectacle occasioned by the smoke and fire belching cars as they started off one after another out of the cloud of vapor—the sun as yet scarcely above the horizon and the all pervading October morning mist making things doubly difficult—there was nothing to do but to await the coming of the competitors on the first round; the passing of several rounds in idleness, in fact, for the light before 7 a. m. at this time of the year is not conducive to the accurate recording of the image of a flying apparition at nearly eighty miles an hour. Nor of anything else moving for that matter; lenses, shutters and plates, photography in general, has its limitations.

Within a second or two of the time that the bugler sounded his monotonous call—frequently before he finished it—a black speck would appear a mile or more down the road toward Hyde Park, as yet invisible to the occupants of the stands below, and, growing momentarily, would flash by in a roar, with every part rocking and swaying, the steering wheel jolting in the driver's hand at every inequality of the road and with both occupants of what appeared to be little less than a flying shell swaying and bending in unison with the movement of the car. Those on the ground described the sight as thrilling, but to the photographer on the roof, who could gaze directly down upon it, there was something more than that to it; the passage of the first few cars occasioned a feeling at the pit of the stomach much akin to that produced by the sudden dropping of an elevator; every instant it seemed certain that both occupants were about to be hurled into something, or as if the car itself was doomed to spontaneous destruction, leaving them distributed promiscuously in gory pieces over the road and adjacent scenery. This was the consensus of opinion of those who watched the cars go by from the roof, and, although one became somewhat accustomed to the sight, even the photographer, there remained that feeling that something was about to happen to the car.

Gasolene Delivered Milkman Fashion.

A rather good suggestion for the local dealer comes from across the pond in the shape of an item to the effect that a firm has lately taken up the practice of delivering gasolene at the private stables of its clients every morning, thus following the milkman about with the day's supply of fuel for the machine. At the same time the machine, which is specially constructed for the purpose, takes or delivers, as the case may be, tires or small parts, which the house in question repairs and subsequently returns to the owner without extra charge.

Horse Oddly Kills a Motorist.

When the automobile meets its forerunner the horse on the highway the latter is usually the sufferer in case of a disagreement as to the right of way, but a Massachusetts equine recently took it into its head to set up a new precedent and when run into by a party in a car from Holyoke, promptly proceeded to climb into the automobile. In so doing the owner of the car, a Dr. Menard, was jammed between the steering wheel and the seat, injuring him so seriously that he died a few hours later.

Thomas Will Await France's Decision.

Pending the receipt of conclusive advices from the Automobile Club of France defining its attitude toward the Vanderbilt Cup races of the future, E. R. Thomas, of Buffalo, will permit his cup plans to rest. He states that the interest displayed in his proposal to offer a trophy for competition between American cars was very gratifying, several prominent manufacturers having assured him of their willingness to build special cars to compete for his trophy.

So successful was the race meet held by the New Jersey Automobile and Motor Club at the Waverly track last month that the club has another meet on the tapis for Election Day, November 7. A good field of local stock cars is assured.

FOR SPECIAL MOTOR ROADWAYS

Old Proposal in New Guise Crops up Abroad —Surveys Said to Have Been Made.

Cables from London state that a bill has been prepared and will be introduced into Parliament, which, if passed, will enable its promotors to construct a system of roads which will be especially reserved for the purpose of motor traffic, a much mooted subject. A decision will be rendered at the forthcoming session. Sir Douglas Fox, an eminent engineer, has been retained as consultant, and his sponsorship of the scheme seems to lend credence to the statement that the organization is complete and able.

It is proposed to construct as a beginning, a system of roads leading from London to Southampton, Portsmouth, Brighton and Dover. The main road, which will lead to Brighton, will be joined near Coulsdon and Merstham by the branches to Southampton, Portsmouth and Dover, the total length of the right of way aggregating something like 166 miles.

Of the manner of constructing and maintaining the highway nothing has yet been given out, but it is known that the promoters will seek Parliamentary powers to forcibly take up the necessary lands "for a railless road." Short leading in roads from the ordinary highways will be built, and the entrances to these will be guarded by toll-keepers, who will be responsible for the admission of suitable traffic only, and the clearing of the way of children and animals. It is also proposed to divide the road by a walk, thus keeping the traffic going in opposite directions effectually separated.

Although the project is of but recent growth, it is stated that surveyors are already at work upon the route, and that there is every indication that it will be carried through to a successful issue. Apparently the movement is quite independent of either the Roads Improvement Association or the automobile club.

Two Clubs Choose Officials.

W. S. Belding was unanimously re-elected president of the Automobile Club of Maryland at the annual meeting. Other officers chosen were: Vice-president, R. J. Leupold; secretary, George S. Dickey; treasurer, Ernest J. Knabe, Jr. Messrs. Yellott, Keyser and Reese were appointed a committee to secure favorable legislation at the next General Assembly.

At the first meeting of the Milwaukee (Wis.) Automobile Club since its organization as a corporation, held last week, the following officers for the ensuing club year were elected: President, Sherburn M. Becker; first vice-president, Dr. Louis Fuldner; second vice-president, F. G. Curtis; secretary, James T. Drought; treasurer, William H Pipkorn.

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ABOUT VULCANIZATION

Features of that All-Important Tire Process that are not Generally Understood

To the average individual who is compelled upon occasion to do his own tire repairing, vulcanization means "healing the rubber" until the patch or particular repair under consideration becomes incorporated with the shoe or whatever the foundation may happen to be. Ordinarily of course, the tire goes to the professional repairer and the owner's only connection with the job is paying for it. But it is just as well to know a little more definitely just what vulcanization does imply, particularly as the day of the "do it at home" portable apparatus for this purpose is not far away. Such things are in fact already on the market on the other side, one style being recommended for carrying on the car so that the repair may be vulcanized "while you wait."

As a preliminary it is just as well to bear in mind some of the stages the crude rubber passes through before it becomes a tire. So far as its use for everyday purposes is concerned, raw rubber is of small value. It must first be relieved of all foreign matter such as dirt and chips that adhere to it and become incorporated in the mass of sticky, vile smelling substance that constitutes the product as it comes to the hands of the manufacturer. To do this it is passed through tremendous rolls washed, rolled and washed again, until entirely clean and then hung up in huge white sheets to dry. It is then ready for the curing a process which differs more or less in every factory, for from the earliest days of the rubber industry, this question of how best to prepare and cure it has absolved, and still is for that matter, taking most of the time and attention of a number of experts. Various chemical agents are employed, chief among them being sulphur, owing to its cheapness and ease of working. But it would be impossible to go into detail on this branch of the subject for therein lie the carefully guarded secrets of the business that are handed down from father to son. What may be best for the purpose and how to employ it to the greatest advantage can hardly be termed settled questions for chemistry without number are constantly experimenting with an eye toward improvement in this direction. However that may be, the materials are specially blended and compounded under the eye of the expert chemist well versed in the peculiarities of the substance, so that this is hardly a matter with which the amateur will ever have to deal. There is also considerable difference of opinion as to the length of time required to properly cure the crude rubber and bring it to a state where it is ready for vulcanization, this varying from days to months.

In the conversion of the cured rubber into what is known as vulcanized rubber, a certain degree of heat applied for a stated length of time is necessary to bring about the chemical change, the duration of the process varying according to the nature of the chemical compound employed, but in all cases vulcanization is arrested at the moment that the rubber has reached the stage at which it is in its most elastic and durable form suited to commercial application; for instance in the manufacture of inner tubes and shoes, the process is brought to an end at the point where the conversion is deemed to be complete for the purpose to which it is to be used. Beyond this any further application of heat has an injurious effect on the rubber and if permitted to continue sufficiently long it would finally arrive at a stage where it would become hard and brittle forming the material commonly known as vulcanite and totally unsuited for tire uses.

From this it will be apparent that it is impossible to vulcanize a patch or other repair without also continuing the process of vulcanization to those parts of the tube or shoe again brought in contact with the heated surface that surrounds the spot being worked. Thus in producing materials for what may aptly be termed local repairs, the rubber chemist has if anything, a more difficult task than at the outset, for he must prepare compounds which will in the course of periods necessarily but a fraction of those originally devoted to the operation, often 20 to 30 minutes, vulcanize and amalgamate with the foundations which may have been, as in the case of a shoe, hours under treatment. The object in view is naturally to subject the already vulcanized portion to the shortest possible heating while effecting the repair. It must be borne in mind that this cannot be accomplished without carrying the vulcanizing process a step further toward the hard or vulcanite stage already referred to. This will doubtless explain to the novice who has tried his hand at it, why after failing to make a satisfactory job of placing a patch or closing a bad cut at the first application, and the attempt has been repeated a few times, the rubber adjacent to the spot worked on is found to have assumed different characteristics from the remainder of the tire. Such treatment of an inner tube would doubtless result in the repair giving way upon inflation or not long after, and upon examination the material would be found to have become either a mass of cracks or porous and flabby.

It will readily be seen from the foregoing that failure to effect a clean and sound, as well as rapid repair at the first trial can only result in deteriorating the article under repair by repeating the attempt, which, if carried far enough will end in its ruin by fatally changing its qualities, such as forming a resilient into a hard and brittle substance.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau Street, New York.

KEEPS LABORERS AWAKE

How the Motor Car Accomplishes that Useful Service in the Far East.

Its adaptability to both passenger and freight service about town and in schedule rural work, the motor car has already demonstrated to the satisfaction of those who have given it anything like a fair trial. Its imperative need of good road conditions has, however, seemed to bar it from service in any sort of pioneer work up to the present time. The following glowing testimonial from the correspondent of a contemporary who has used a touring car to great advantage in railway construction work, where the scope of his labors has been greatly enhanced by its adoption, is very significant. He says:

"It is almost impossible to calculate the great value of a motor car during railway construction, more especially in India. The usual routine of a gang is to work hard during the presence of an official, and on his departure to spend a greater portion of the remainder of the working day in sleep. If far away from headquarters it was only now and then that the chief engineer could visit each individual work when horses were used; with a motor car every part of the work on a short line can be inspected daily, and no one can say when the dreaded chief will put in an appearance. I am also convinced that long before the construction is finished the cost of my car will have been saved by the reduction in the number of subordinate officials made possible by rapid locomotion."

Inducements to Chauffeurs.

A firm of London manufacturers has offered a very handsome inducement to chauffeurs who handle the machines under their care in an economical manner by putting up prizes of $5, together with a certificate of excellence, which will be given to all drivers of their cars who cover a total distance of five thousand miles at a total cost of $90 for the 10-12 horsepower model to $310 for the 24-30 type. This works out at something like .018 to .062 cent per mile, and is to include all items of expense, including tires and supplies.

Why London's Cops are so Active.

An explanation that sheds a flood of light upon the intense zeal displayed by the English "bobby" in apprehending the motorist who is so indiscreet as to exceed the legal limit by a hundredth of a mile is to be found in the fact that "Robert" is working for his own pocket all the time. The fines go to the police pension fund, and, judging from the amount collected in the last twelve months—something like $1,500,000—the superannuated "peelers" of the "tight little isle" should have nothing to fear for some time to come.

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The Lady in the Landaulet.



There can be little doubt that the increase in the use of the various forms of closed body will be marked even more during the coming winter than it has been during the current year, for the art of body building has reached such a fine point, and the creations along this line are so appealing to all the senses of the user that even setting aside the dictates of fashion, the closed car is likely to prove quite irresistible to every buyer who "has the price."

Anticipating a greater demand this year than ever before for these types of "carrosserie," the makers are one and all getting out their "de luxe editions" as early as possible, several magnificent specimens of the 1906 models already being in evidence.

The accompanying illustration is of one of the number—the new White Landaulet, mounted on the 1906 chassis, which is distinctly different from the older models in appearance as well as in point of design. That the car is an impressive one a glance will suffice to show.

Women Who Would be Chauffeurs.

According to the manager of a Chicago automobile school, there are quite a few women in the Windy City who have the "chauffeur bug"; they think they want to become professional drivers. These women applicants find it plain enough sailing until they come to the question of about crawling under the car, on a muddy street to repair something wrong with the mechanism, at which most of them balk. Some are even willing to assert that this is not too much for their ambition to overcome, but their determination must wilt upon more mature deliberation for few of them ever call more than once.

A retail dealer, who is not an American, having just installed a motor delivery, has adopted the catch phrase, "Buy a piano and have it delivered at your door before you get home." His faith in the speed of the commercial motor vehicle is delightful to contemplate.

Vastness of Second-Hand Sales.

Some idea of the vastness of the second hand automobile trade in London may be gained from the summary of the business of a large exchange house there which has just closed its books for the fiscal year. The total volume of business done represents something like $1,309,000 in round numbers, which amounts to $20,200 in weekly receipts. This has come from the sale of 1,879 cars and 539 motorcycles in all, or an average of 47 vehicles disposed of during each week.

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Fifth Avenue Stage Line Falters.

From the fryingpan into the fire, would seem to represent the present status of New York's Fifth avenue stage line. For a number of years the company has been issuing periodical promises as to the abandonment of the generation old plugs and "deadwood" coaches that have been an eyesore for so long. With equal regularity it has kept on promising and neglecting to "make good." The solitary electric 'bus which was so exclusive and apparently considered such a luxury that double fare was charged on it was discarded as being too small to pay. But in accordance with the latest promise another sample is being tried; it is said to be a monstrosity of over 30 feet in length and so broad that it takes up more than half of Fifth avenue.

"Back to the old time nags rather than this," is the Fifth avenue consensus of opinion as the result of a few trial trips of the new ark, which in addition to being so cumbersome that it leaves no room for anything else, is so slow and underpowered that it cannot get out of its own way. On one of its trips last week it stalled on the grade above Thirty-Fourth street and afforded ten minutes' amusement for an interested crowd that watched its vain attempts to negotiate the slippery asphalt until relief came in the shape of a sprinkling of sand. Coach men and even cabbies gave the monster 'bus a wide berth, and its great size and the manner in which it monopolized the road in its immediate neighborhood as it went along led many to wonder what Fifth avenue would be like with a hundred such vehicles on it.

For Those with Cold Feet.

Those motorists who suffer from cold feet and ankles during the winter months should have their machines equipped with doors to the footboards, such as are fitted regularly to one or two of the foreign cars. If not convenient to have these made of wood or metal and fitted permanently, a very good thing to do is to have them made of dashboard leather, such as is used in buggies, strengthened with a wire framework, which need not be heavily made, and fastened in place by means of swivel buttons like those used in fastening the boots and cheeks of carriages. The door which is to go on the driver's side need not be as readily detachable as the other, and may be as high as is possible without interfering with the handling of the levers. The other should be readily demountable, and should not be too high to prevent one's stepping over it in case of need.

Long Island Line That Paid.

In an open letter to the public recently sent out, the management of the Long Island Automobile Observation Co., which has been operating a single machine on the route between Huntington and Amityville, Long Island, during the present season, reports a daily income varying from $35.30 on good days to $1.60 in bad weather, which averages something like $18.60 for the period during the month of August, which is quoted. During this time the daily expenses ranged from $7 to $8, including running repairs.

It is proposed to reorganize before the beginning of the year, with sufficient capital so that three more machines may be purchased. The plan is to operate two machines regularly on the Huntington-Amityville route, each making at least two round trips a day, and to use a third for tripper service to Huntington Harbor on boat days and for general livery service. The fourth car is intended to be held in reserve at all times for emergency work in relieving the machines which are on schedule in case they break down.

This Tire is Insect Proof.

"Water, rot, insect and puncture proof" is the modest recommendation outlining but a few of the many advantages of the very latest revolutionizer that is to make the pneumatic tire a back number. It comes from Minneapolis, and is a variation of the old, old story of the spring wheel, with just sufficient flavor of novelty about it to make it worth while recording.

It is termed the Hodgson tire, and gets its resilience from a series of helical springs placed around the rim and compressed to a point where their resistance is sufficient to carry the weight of the car without further compression. Steel wire cable is then wound round the outer face of the series of springs to form an outer rim or tread to the wheel, and also to keep the springs in a state of compression. Over this is wound a chemically prepared textile fabric which is the foundation of the "water, rot and insect proof" recommendation. The whole rim is then covered with a rubber case that comes down over the sides of the springs and is clamped to the wooden rim in much the same manner as the ordinary pneumatic tire. Modifications of this part of the construction call for a rim of several layers of leather armed with brass or steel studs, or a steel rim of the regulation type for heavy trucks.

Winter Protection of Steering Gear.

Protection for the joints of the steering gear is a necessity at all times, but never more necessary than when mud and ice are most prevalent, as in cold weather. For this purpose many cars are provided with leather coverings on the joints when sent out from the factory. This is a desirable provision, and if not already made on the car as received it will prove a wise piece of forethought to supply it, regardless of the weather. The joints should first be well washed with kerosene or gasolene, and then covered with heavy grease, after which the whole should be inclosed in a flexible leather casing, neatly sewn around the joint. If a well fitting and neat appearing job is wanted the services of a harness or shoe maker will be desirable.

Worcester Sees Some Skidding Stunts.

Part of the population of Worcester, Mass., was recently treated to an impromptu exhibition of "skidding," which left behind an impression of what the automobile is capable of in this direction when it starts in to perform. Nothing ever happens off Main street in a small city, so, of course, this street was the scene of action.

The actors were one laundry wagon in motion down the centre of the aforesaid Main street at the peaceful and law-abiding limit of six miles per; one other wagon, classification not given, lawfully standing still at the curb, and one automobile, which, of course, came "tearing down" the same Main street and tried to pass between the two wagons in order to "cut in" ahead of the laundry delivery. Everything proceeded as planned until the rear wheel of the car struck the front leg of the clothes horse, and then things began to happen. The car did the "circle, face your partner and salute" act in great style, while a number of local citizens looked on in open mouthed astonishment. Then it kept right on sliding sidewise down the street until it ended up diagonally across the car tracks a few lengths away, heading back in the direction from which it had originally come. Local opinion was divided as to the cause of the remarkable stunt, but finally attributed it to the uncertainty of automobile management. Strange to relate, no damage was done to the horse, car or the occupants of either vehicle, although both did some powerful thinking for a moment or two, especially the chauffeur. The animal did not even lose its footing.

Old Yarn in English Dress

The motor car had just reached a nice level stretch of road, and the man in goggles was preparing for a scorch, when an honest eyed old countryman stepped from the hedgeside and held up his hand.

"Reckon you was jes' goin' to slip along tidy fast," he observed when the motor was brought to a standstill.

The motorist gave no denial to the statement. "What made you ask?" he inquired.

The bucolic one produced a pair of battered field glasses.

"Clap your eyes to these 'ere," he remarked, "and look up that there tree along the road. Happen you'll see something as'll make you change your mind.

"Great Scot! A police trap!" exclaimed the motorist as he discerned a blue trousered figure perched on a branch. "Thanks, old friend," and the clink of coins was heard.

A minute later a motor car was crawling past the tree at six miles an hour, while its driver waved his hand airily to the figure above. Two hundred yards back an innocent looking old countryman was counting his wealth and smiling.

"That there idea of cartin' that scarecrow from the peafield and fixin' of it to the tree," he chuckled, "worn't 'arf bad."—(Tit Bits.

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THE TALE OF A SECOND-HAND

Being the Not Unfamiliar Narrative of the Unconcluded Tour of a Bargain Hunter.

They were all devotees of the car and the post prandial interchange of experiences had covered every topic imaginable, from the massacre of poultry at eighty miles an hour up to wayside carburretter adjustment, each giving way as the next narrator took the floor after a short period of silence when all would cast about half sheepishly to see who the next Munchausen would be. From tires to gears, gears to clutches, all over the motor and back again went the contributions of personal experiences in trouble hunting and conquering, until the range of possible mechanical defection to which steel and copper could be subject seemed to have been thoroughly covered.

It was the monthly club dinner, or had been, for the gathering had progressed to the coffee and cigar story telling stage, and every one was vieing with his neighbor and the assemblage at large to add something to the general fund of information without getting on to the tacitly forbidden subject of speeding, and particularly night violations of common sense. Every one had had occasion to meet and conquer more or less minor ailments to his car during the past thirty days, but somehow or other they didn't make the interesting telling that a night ride that had all past performances for speed faded. Records were the thing, and what more exciting than rushing along under the trees with that dazzling white twin shaft piercing the darkness, hand and foot tense, every nerve ready for what might be around the corner. But what was the use; every new silence brought apprehensive glances at the first speaker with the expectation that he at least might be the one to break the taboo.

"Yes, same old story; two hours looking over everything but the inside of the tank. We lent them a few pints of gasolene, didn't have overmuch ourselves," concluded the last speaker dejectedly when a new arrival silently came in, helped himself to a cigar and tried to fade into the smoke of the smoke unnoticed. But all to no purpose.

"There's Ollie," chirped one, and in a moment there was a general acclaim. "It's Ollie's turn. He hasn't told a story in three months. How about that car you bought at the beginning of the season to go on a tour and came back without? Yes, how about that car? Give us a change of subject. Why did you come back on the train? Where's the car?"

"I suppose I may as well make a clean breast of it, and there couldn't be a more appreciative audience," said the victim. "My entrance into this charmed circle did not happen until some time after that affair, and I kept the secret so well I had come to regard it as what the diplomats are fond of terming a 'closed incident,' but as long as I'm cornered I'll come up to the scratch.

"First, let me make my confession of crime. That was a second-hand car," an announcement that called forth a collective groan. "It may be just as well to explain that I was about as raw a specimen where automobile knowledge is concerned as ever happened on this planet. Carnegie's book handouts, all of them, would fall short of holding what I didn't know about cars in general and about that particular make or any other. I was so ignorant that I fully realized my lack of knowledge, but I was a subscriber to almost every automobile magazine published. Technical matters always bored me. I had a supreme contempt of the greasy mechanic, so I invariably passed over explanations and descriptions of the inside of the car and concentrated my attention on the touring department. Reading the delightful experiences of Tom, Dick and Harry, rolling along through beautiful country, covering a hundred to two hundred miles a day without the faintest trouble, and all for the price of a few gallons of gasolene. It wasn't long before I was on fire to do the same thing. I saw myself holding the wheel of a big touring car and dashing along at thirty an hour in my dreams every night for months. Then a brilliant idea struck me. I would buy a car and take a run out home. I hadn't been home in eight years; had been going back to see the folks every summer, but put it off just as regularly as it came around. I felt like a two-year-old when I conceived the scheme of spending my vacation on a tour and a visit to the old people. The trip couldn't take more than a week at the most, according to the rate at which the touring parties in the magazines got around. There would be plenty of time to give everybody of my acquaintance a ride. My, how important I felt; if the Street had gone my way on a big deal I couldn't have been puffed up more. In my imagination every one of the boys that had stayed home in the village was bursting with jealousy. I was made. But the car hadn't been acquired yet; it was all in my imagination.

"It was a natural step from the touring department to the ads., and the way I studied them was a credit to their compilers. But every car was the best one ever made. There wasn't anything on it to get out of order, nothing short of breaking it up with an ax would ever cause it to stop or balk. Some of those ads. were like schoolboy exercises to me. I could repeat them backward or start in the middle and say them both ways without missing a recommendation.

" 'Four cylinder vertical motor of most approved type, constructed of extra special material throughout. Rated at 24 horsepower but has shown 40 on the brake. Automatic carburretters, sliding gear, three speeds and reverse, direct on high gear, no danger of stripping,' but you all know the rest, so there's no necessity of going any further with that speech."

"Huh, I gulped down the first one I read," grumbled one of the audience, sotto voce.

"While I was reciting advertising backwards and forwards to make up my mind whether what I needed was a two-cylinder or four-cylinder, or whether it should have 20 or 60 horsepower, or which particular allurement I should go down before, the cause of my undoing appeared in the shape of a seductive article written by some one with a fancy nom de plume. I think I would have risked hearing a sentence of $10 or ten days if I could only have got my hands on that fellow at the right time. His contribution was on 'How to buy a second-hand car.' "

" Now he's getting warm," came from nowhere in particular. "I thought that would be a good way to save a few centuries myself, but I was flagged in time and put my money in a new car."

"It isn't my set purpose and intention to discourage the sale of second-hand cars. I am about to unburden my soul though, and any one who has a hand-me-down in mind better make up his mind it's time to go home unless he thinks of going around first thing in the morning to call the deal off. The article that led me to ruin took up three or four pages of that issue of the magazine. Full of illustrations, photographs, every one of them, so far as I could see, those second-hand cars looked just the same as any one of the best evers in the advertising—a little better, I thought. More business like; looked as if they were useful as well as ornamental. Well, to cut that part of it short, the article was to the effect, 'Why buy a new car when you can't afford the price, and can get one that is just as well if not better for half the price?' Why, indeed, thought I to myself. Two thou' hadn't looked such a great deal when I was in the first hot flush of enthusiasm to pay a visit to the old home at the wheel of a big yellow touring car, but somehow or other it looked bigger and bigger every time I thought of it from then on.

"What was the use of putting out all that when possibly I could pick up something rare in the shape of a bargain for half? Or maybe even as low as eight hundred. The article said the market was flooded with them of all kinds, and said, by the way that many a four-cylinder vertical, you know the rest, had been knocked down at that. Owner needed the money, and all that. I forgot all those best ever ads as if they had never been written. Nothing but a second-hand for mine from then on. But there was a part of the article that worried me a good bit. Down about the last paragraph it said the second-hand car was not always what it seemed—beware of the dealer and his blandishments, and then it cut off short with 'To be continued in our next.' I did nothing but study second-hand dealers' ads. for a week while waiting for the next issue. Volumes of them. Cars from $125 up. All in absolutely perfect condition. I was in almost as much of a quandary as I had been about the best ever ads. That week finally came to an end and with it came the next issue of the paper with the second installment of the article. The minute I attempted it I began to realize there were a few things about an

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automobile I wasn't familiar with. I won't bore you with detail, but it was Greek to me. Told how to examine clutches, bearings, valves, steering head and what not; according to it there could be more things wrong with a second-hand car than were ever included in my philosophy. But there was a ray of hope in it after all. Get an expert to look over a car for you before buying it. Any good mechanic can detect its weak points at first sight.

"I put a want ad. in the paper that very night for a good mechanic who knew how to run an automobile. It would be easy to kill two birds with one shot by hiring a mechanic to help buy the car and keep him to drive it, or rather to attend to the dirty work on the trip, for I never imagined any one but yours truly behind the wheel. Heaps of applications, of course. Stack of letters a yard high. To make a long story short, I took one of them who struck me as being wise to all the wrinkles of the game. He was, but not the way I anticipated. Never was confiding faith in human nature more rudely shaken.

"I stuffed my pocket full of newspaper clippings of bargains and we set forth. But he knew just where to find what I was looking for, and steered be to a place uptown. How I could have been so pig headed as not to notice that my new man and the salesman I was dickering with had some trade telepathic system of communication, and used it right under my nose, gets my gall. But to cut it short, after the two had arranged it to suit themselves and my man had settled the size of his rakeoff, they sold me the car. Twelve hundred was more than I had decided to pay for a second-hand car. The ads. were so alluringly worded about the big cars that were to be had for a song that I thought it would only be necessary for me to pick what I wanted at any old price. But she looked worth the price, every inch. She was a monster and heavy as a freight mogul as I learned later to my cost.

"They fooled around a bit filling up tanks and what not and after a seance with the crank, which I noticed my man delegated to the salesman, the motor buzzed and all three of us climbed in, the salesman at the wheel. Up Fifth avenue and through the park big as life. I could hardly sit still so anxious was I to hold on to that wheel. The fearful racket the motor made in a vain attempt to shake things to pieces every time we were held up was disconcerting, but that and many another thing not half as plain did not exist for me then. I found them out soon enough, however. I'll pass over the next two weeks of my motoring career; the subject is a painful one. The car was demonstrated daily for my benefit. I neglected business and everything else, and in the quiet stretches of the park I finally mastered the hang of that wheel and those pedals. In the mean time I simply fed that man with coin. According to him, that machine needed enough replacements and odds and ends in the mechanical line to fit up the engine room of a first class battleship.

Finally everything was ready for the 1,500-mile trip. A century and a half—twice as much as it would have cost to have made the round trip on the train in bang-up style—would hardly cover the cost of the clothes and stuff I bought myself. But a ten-dollar leather cap, a five-dollar pair of goggles and thirty-five more for a coat made me feel as I owned a whole automobile stud of imported cars. For safety sake I resigned the wheel to my man in the traffic, but got hold of it after we got out of the city and was sure the day of my dreams had at last come. Within less than a week I would be surprising all my old cronies with my style. We hadn't gone more than five miles when something went off under the bonnet like a two-dollar cannon cracker, and blue black smoke poured out from under the bonnet. How we stopped is a mystery, but I did it, that's certain. I grabbed for everything in sight, and if we hadn't stopped right then and there it would have been a case for the coroner, for when we did bring up we were headed dead at a telegraph pole and within two feet of it. I had twisted the wheel in my excitement, as well as everything else I could lay hold of.

My may Friday nosed around gingerly, for everything was red hot, cursing like a trooper. Funny I had never watched him closely before, but now I was out driving my own car I was going to learn the ins and outs, and I was onto every move he made. I began to have misgivings at the first glance, but it was too late to turn back. He fussed and fumed around, covering himself with grease and sweat ,and with every oath he let out my soul sunk further. It was plain his profanity was a screen for his ignorance. He didn't know the commutator from the carburetter, but finally in desperation said he had "fixed it" and got at the crank. She started right off and brought my spirits up again. We got about five miles further along—twelve was her top notch—everything serene and peaceful, when the firecracker performance was repeated, but nothing gave way and we kept on. All was calm again for another half hour or so, when she exploded three times in succession in less than a mile. That last was too much for my nerves, and I again pulled everything handy and stopped her. We were about ready for a fight to a finish as we climbed out opposite sides of the car glaring at each other. The only visible derangement was a loose end of wire dangling around, and after making a great bluff at fixing this Friday announced another start, and, sure enough, the first turn started her hammering away. I felt better again.

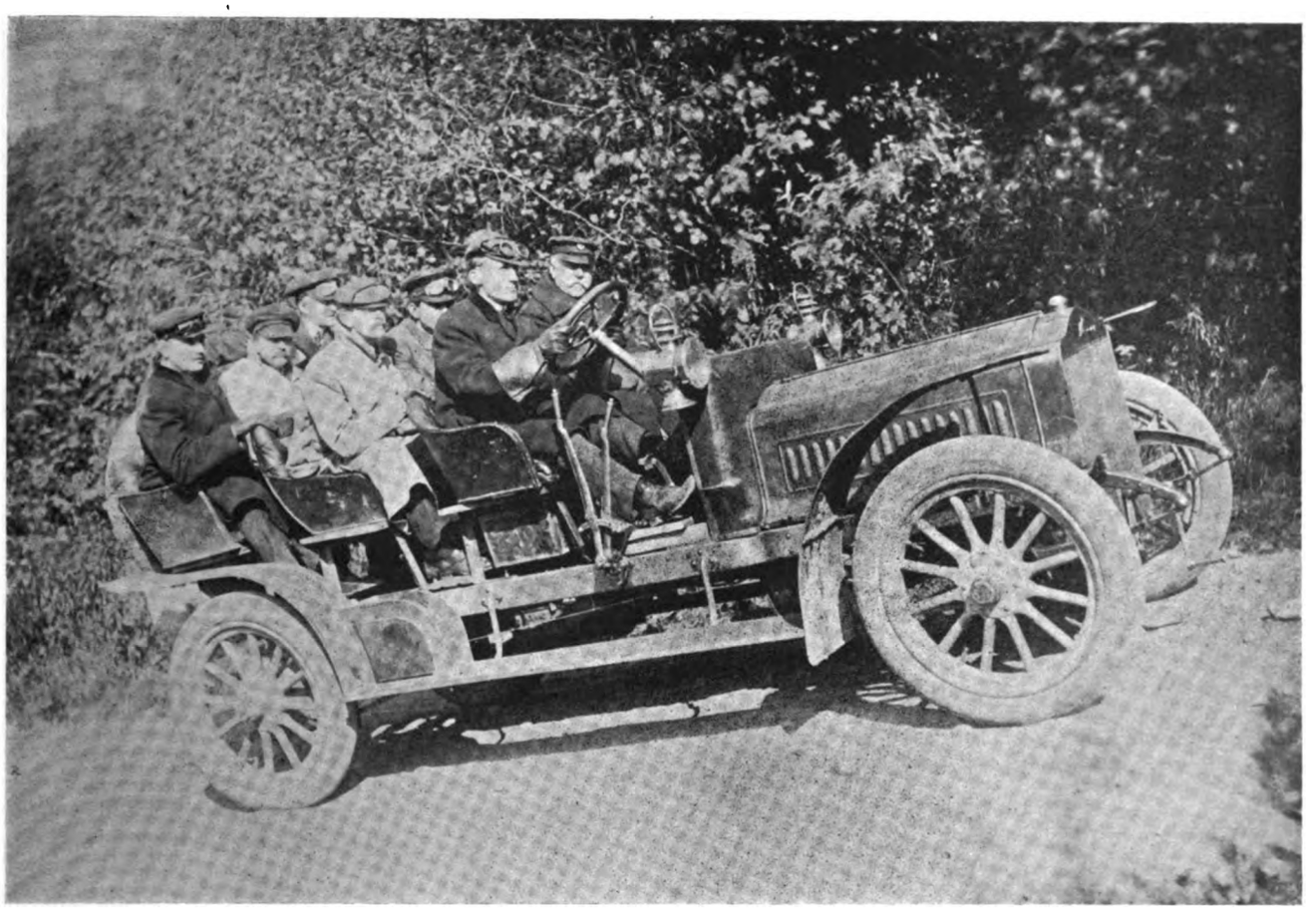
Well to summarize our stops for the day, and I speak now in the light of a vast store of since acquired wisdom, we were held up twice by the explosions, which were caused by a broken inlet valve on the third cylinder. There was a ragged p ece chipped off it amounting to a third of the valve. I found out that the cylinder had never been firing since the car had come into my possession up to that morning, and the last repairman who had honestly fixed the wiring was the cause of it.

"The compression stroke forced the gas out as quickly as it came in, and so there was no explosion, but about every once in so often the mixture would become just right and the explosion would shoot out that hole in the valve. The third time was too much for the plug, and that was why it didn't trouble us any more after that. How that ramshackle affair was kept going the two weeks I was practising with it home is a deep and dark mystery to me, for we made four stops more to adjust the tremblers, which kept sticking. Once just in time to prevent everything going heavenward, for half the water was gone and the rest boiling furiously. She actually blew off when the tank was opened. Only the trouble Friday had in finding water saved us walking ten miles to the nearest town, for everything was simply sizzling and cold water in the jackets then would have split everything to pieces. Ten hours on the road, eight stops and the odometer recorded forty-five miles since early noon. It was discouraging, but there was still some hope left and I wanted to get as far as possible so we determined to make a town eighteen miles away before putting up for the night.

Pitch blackness settled over the wooded road before we made half the distance and hungry, dirty and sore all over the slow plugging along behind those two feeble yellow shafts from the oil lamps was maddening. Friday was almost asleep and I was pretty nearly as bad when I began to realize that something must be on fire. Paint was burning somewhere and even where I was sitting was becoming uncomfortably warm. Before I made up my mind to do anything the motor gave a final sickly wheeze and died, standing there all aquiver with the heat and nauseating smell of burning paint and grease. Friday was through with trouble hunting and made straight for the crank, but he might just as well have tried to put the car in his pocket. He hauled until I thought he would burst a blood vessel but didn't succeed in moving it more than an eighth of a turn. I took pity on him and we got hold of it together and with a mighty heave gave her almost a full revolution when there was an ear splitting roar followed by a flash of fire from under the bonnet. In less time than it takes to tell it she was afire fore and aft and amidships. Like Napoleon watching Moscow go up in flames, I stood there after the first shock was over, folded my arms in utter resignation and watched my twelve hundred vanish until with the last splutter I was again in darkness. Then I looked for Friday and I'm looking yet. I hoofed it to the town still a good five miles and finished the trip in a sleeper. I hope the mystery of the strange disappearance of my first car is no longer such.

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Putting a Safety Device to the Test.



One of the striking features of the latter models of cars which is coming more and more into prominence is the facility with which they can be handled on grades. Not simply an ample surplus store of power is necessary for this, but as well, the finest of braking equipments. Besides the regular brakes, many of the machines are now fitted with some sort of safety devices which prevent their rolling backward without the volition of the operator.

The illustration shows one such device being "put to the test"—the Thomas safety device as applied to the 1906 Thomas Flyer, fitted with a testing body, in which E. R. Thomas himself and the various department heads of the factory are caught in the act of trying out the Thomas invention on a twenty per cent grade. By the aid of this device the machine is enabled to stop and start again on even so steep a grade as this without using the brakes at all, and without straining the engine beyond its limit.

"Beating the Time Clock."

Time recording clocks have in the past year or so become a feature of most large garages and a prominent establishment in the Windy City recently added one of these "tab keepers" on the movements of its employees and cars and placed it in charge of the watchman, whereby hangs a tale. The watchman is well past his prime and for the first few days he was as tickled with it as a child with a new toy; he took particular delight in dropping the little cards into the slot, pushing the lever and ringing the bell.

But one of the chauffeurs looked upon the innovation with suspicion and finally became convinced that it was a snare to record his comings and goings and thereby bring him into disrepute with his employer, so he undertook to "beat the machine" and his performance gave the watchman a mild attack of heart disease. Starting at nine in the morning he took the car out and was of course, promptly "rung up." At 9.05 he returned and was marked in. At 9.20 he went out again and from then on continued an intermittent series of trips round the block and in and out of the garage, which made a line of "ins and outs" on the card that almost filled it and kept the watchman busy until the middle of theafternoon. The gray haired timekeeper smiled grimly but kept right on punching. Then the "hired man in the leather suit" rested a while but soon restarted the engine and stood by as if ready to leave at any moment. He let it run for an hour, the timekeeper waiting with the card in his hand ready to punch it. A short time after that a telephone message came from the owner and the car went out on its only legitimate exit that day. Half an hour later an urgent appeal that a supply of gasolene be sent to a point in the suburbs came over the telephone.

"Let him come and git it," was the ultimatum of the watchman to whom the request was referred. It was a crestfallen young man who climbed off a street car half an hour later and lugging a can of gasolene departed in the same manner. He has not tried to beat the machine since. A study of the day's cards showed that he had worked the clock to the extent of sixty-four "ins and outs."

Paris is to have a motor police brigade two hundred strong. Their duties should not prove burdensome under the extremely liberal policy of enforcing the law followed in the French capital, but they will be there to catch the occasional offender, nevertheless, and in order to demonstrate their fitness to know when he is violating the law they will be put through a rigorous examination.

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FRANCE'S FAMOUS ROADS

How They Are Departmentized and Built—The Sand Surface that Prevents Mud.

So much has been written of the excellence of the roads to be found in all parts of France, and such a constantly increasing number of tourists go abroad each year to enjoy motoring over them that it will be of interest to learn how the country came to enjoy the advantages of such a perfect system of roads. As in England, the roads in France were for several centuries after the decline of the Roman Empire in a state of dilapidation owing to long continued neglect. In the latter part of the seventeenth century Louis XIV. had some good roads built in the vicinity of Paris, but it was not until near the end of the eighteenth century, or about 1775 that the real work of roadmaking, the result of which is now so prominently in evidence throughout the country, was undertaken. It was in the time of Napoleon I. that most of the great national roads which run through the country in various directions were built. These were constructed principally for military purposes and connected Paris with the French frontiers.

There are roads of varying degrees of importance in the system, all being classified according to who is responsible for their maintenance. First comes the Routes Nationales, which are constructed and maintained by the national government. Next to these in the order of importance come the Routes Departmentales, that are maintained by the several departments or provinces at the national expense. Next are "Chemins vicinaux de Grande Communication." and "de moyenne communication," the first being roads that pass through and connect two or more communes, and the second are of the same class, though of lesser importance. Both are maintained by the communes interested and served by them, aided by government grant in the case of the more important ones, while the others are under the control of the departments in which they are located. Still lower in the scale come the "Chemins de petite communication," maintained by the communes separately, under the supervision of government engineers. Last are the "Chemins ruraux," which may best be described as "parish" or local roads, and are maintained and wholly controlled by the commune in which they are situated.

For the most part the roads are flat, particularly between Boulogne and Paris. The standard of grade adopted is 3 in 100 for national roads, 4 in 100 for departmental roads, and for those of lesser importance 5 in 100. Except in very hilly districts or where traffic is too light to warrant the extra expenditure to keep down the grade, these standards have been adopted. This, taken together with the good climate, had been the reason why it has been so popular for automobiling right from the first, when powers were low.

The national road, of course, represents the best type, of which that leading from Paris through Fontainbleau to Lyons is a good example. This portion was originally paved, but the paving has since been lifted and six inches of macadam on a nine-inch foundation substituted. Curbs with drain channels three feet in width and of paving blocks flank it on both sides. This was done six years ago, and despite the fact that comparatively few repairs have been made in the mean time, the surface is said to be in excellent condition. Behind the curbs are lines of trees planted fully half a century ago and now in excellent condition. Beyond these trees are nine-foot equestrian paths, the curb being lowered or a grass verge being substituted at short intervals to allow of easy access to and from the paths. A special feature of this stretch of road is its straight line with slightly undulating gradient. Such a great length of straight road, however, makes rather monotonous travelling.

Some of these national roads which at an earlier period in their history were used for military purposes were originally paved with stone blocks. Some of this is still in existence, such as that near Versailles, but most of the "pavé," which is the execration of the motorist, has now been lifted, the stones used for a foundation and the surface macadamized.

In the early period of the construction of these roads, the earth formation was made horizontal and the bottoming eighteen inches thick in the middle and twelve inches at the sides, the convexity of the surface being formed with the materials, but one of the French engineers considered this excessive and introduced the rounded form of earth formation, with only ten inches of bottoming from side to side, and this is the method now generally adopted, both in France and England. But only about 9,000 miles out of the 22,000 miles of national roads in France are built in this manner with a hand-set foundation, the others being what are termed "broken stone" roads, the material being broken stone laid on promiscuously after the system introduced by Macadam. Some of the lower class roads are constructed of gravel and others of earth.

The materials used in the construction and maintenance of the roads vary according to the kind of stone found locally in the various provinces of the country. Some of the most common are millstone grit, white flint and flinty sandstone. The millstone grit is dug out of the ground, being found at a depth of three or four feet under the surface, while the sandstone is taken from such quarries as that of Marechaux. A standard quality of road materials has been adopted in France in order to determine the relative qualities of the various kinds of stone found in the country. The scale ranges from zero to 20, porphyry being the best, with a range of from 10 to 20, and pudding stone the lowest, from 4 to 8. Compared with this standard much of the material used is of medium quality, ranging from 8 to 13 in the scale, but it is evidently considered better economy to use the lower grade of stone found in the district than the better quality brought from a distance at a cost three times as great as that of the local stone.

These flinty freestones which, as already mentioned, comprise the bulk of material, wear fairly well under ordinary conditions, but gradually grind down under the weight of traffic into a fine white sand, and it is that which causes such an excess of dust on French roads in dry weather. On the surface of the majority of the roads in the country will be found this layer of sand of varying thickness. When it becomes excessive it is removed and left in heaps along the side of the road. Although this sand is a great nuisance on account of the clouds of dust it causes, its presence on the surface is rather an advantage than otherwise, as it tends to some extent to prevent the breaking up of the macadam in time of drought, and it does not cause mud in wet weather, as the sandy particles dry quickly after a rain, so there is not the evil of unlimited mud to deal with that prevails in this country.

Fire Extinguishing, Fort Wayne Style.

Here is the very latest in the automobile fire story line. Explosions of the gasolene tank have become such an utterly common rhetorical commodity that it really behooved the daily scribe to cast about for something new and here it is, fresh from Ft. Wayne, in the state of poets and authors, Indiana:

"Leaping into an automobile, with flames surrounding it on all sides from the burning gasolene in the tank, Will Peltier, of the Ft. Wayne garage started the machine against the wind and ran it so rapidly that the flames streamed out behind, only scorching the paint. When the fire had burned out he returned and found the owner of the machine, who had supposed it doomed and had accordingly deserted it."

Rochester's Appearing Prosperous Students.

From Rochester comes the news that the assembly of the class in gas engineering at the opening of the Mechanics Institute looked more like a meeting of the board of directors of the school than otherwise for the class includes some of the most prominent ment of that city, many of them have been operating their own cars for several seasons and others who have recently joined the ranks, but all of whom are at the mercy of hired men and repairers because of their ignorance of the principles and construction of the mechanism.

Purdue's Plant Nearly Completed.

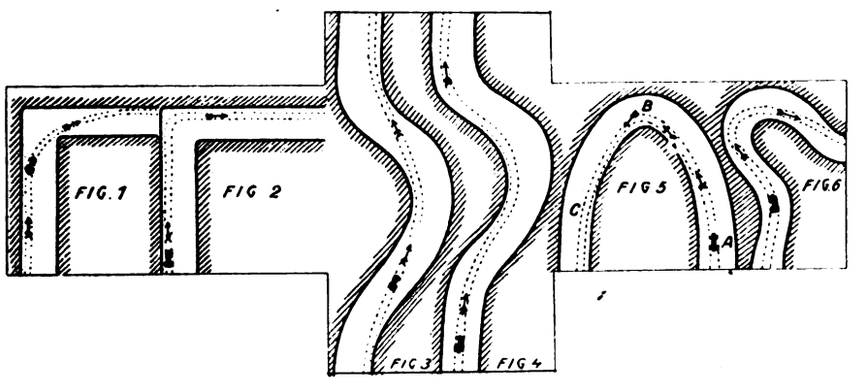
Purdue University's automobile testing plant is now nearing completion in Lafayette, Ind. Tests for fuel consumption, horse power and general efficiency will be made, the plant being one of the most complete of its kind in the country. Some of the leading makers have promised to place cars at the disposal of the faculty for this purpose.

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TAKING THE CURVES

The Several Ways of Doing so at Speed—American vs. Foreign Methods.

"How shall curves be taken?" is a question for the chauffeur that is asked and answered by the official representative of all the German and Austrian automobile clubs, besides a few others, the Allgemeine Automobile Zeitung. It is a question that must be answered from two points of view: How the curves shall be taken when racing and when touring. There is probably more to be said on the former score than on the latter, and in view of the widely varying methods adopted by the American and the foreign drivers in the Vanderbilt Cup race the subject is one of considerable interest.



Under such circumstances the driver can rest assured that the way is clear; he need have no lurking fear that hidden by a house or a clump of trees at the corner which shuts out the view there is some unseen obstacle that means disaster unless avoided. Where the tourist is concerned, safety lies in a moderate speed when the road cannot be plainly seen ahead for some distance, and in a close compliance with the rules of the road, which would mean taking all right angled turns as indicated in the sketch at Fig. 2, and proceeding similarly in every other case, regardless of the nature of the curve—that is, keeping well over to the right, under the American system, or to the left, under the English. So far as the tourist is concerned, there is very little to be said; it is merely a matter of common sense, and it is only when the dictates of the latter are utterly disregarded that the more or less frequent accidents that are given so much prominence occur. With racing it is a totally different proposition; it is a matter of speed at any cost short of annihilation, and there are scientific principles involved that the foreign drivers have apparently taken into consideration, but which the Americans apparently ignored.

These principles have been st closely studied and so well established in years of railroading experience that curves are now laid out on which it is possible to speed heavy trains at a rate that would justifiable have been denounced as suicidal not many years ago. But much of the data evolved in railroading practice does not apply to the automobile, for in the latter there is no limitation similar to that imposed by the rigid wheel base of the car trucks, which must always be considered in plotting a curve. The automobile is capable of turning in little more than its own length, and practically its only limitation is that of centrifugal force and the capability of the tires to withstand the strain imposed upon them. There is one principle, however, that should be so apparent to any one who has considered the subject at all as to scarcely call for comment, and that is that the length of its radius determines the characteristic of the curve; if it be short, the turn will be correspondingly abrupt and difficult to negotiate; in other words, the longer its radius the easier will be the turn.

That this was well recognized by the majority of the foreign drivers was obvious from the manner in which they "shaved" the inside of the turn instead of following the centre line of the road. When some distance from the turn such drivers as Lancia, whose control of the steering wheel aroused universal admiration during the Vanderbilt Cup race, kept over to the extreme right hand from which they headed past the corner, passing whatever obstruction happened to be situated on the latter by such a small margin that the spectators could readily have touched the driver without much effort in the way of stretching out the hand. After rounding the corner, leaving it was but a duplication of taking it; the course followed took the car to a point on the opposite side of the road a hundred yards or more away, and not until this had been gained was any attempt made to bring the car back to the crown of the road. This resulted in a long sweep of more than double the radius of the curve as laid by the road surveyor originally, as the latter based his calculations on the centre line of the road.

This manner of taking the curve is well illustrated by the sketch at Fig. 1, and its adaptation to the "S" and "hairpin" turns is shown in Figs. 3 and 6, while the practice adhered to by a number of the American drivers, although the turns taken were not quite as abrupt, as this would be impossible at high speed, is shown in Fig. 2. Their ideas with one or two exceptions seemed to be very much the same, and they were to keep as far away from obstacles as possible, which naturally meant as near the centre of the road as was practical under the circumstances.

English as it is Writ in India.

Automobiling apparently offers a stumbling block of serious dimensions to the Babu reporter, says the London Globe, as witness the appended gem culled from a Poona paper anent the recent East Indian reliability trials in which a number of cars participated:

"Captain Naylon and Mr. Swifte were the only ones to requisition the patrol supply at Shirwal fully laden and going strong. Mr. Lee cammie Panhard was next seen, and then followed The De Dion running the peculiar drive akin to this running Car. Silently Captain Evans and Colonel Russell's car approached. He seemed quite satisfied with his runs, more engine and passing Shirwal competitors. Mr. Harwood De Dietrick was, as it seems, but this sportsman did not deign to stop at Shirwal, which was a matter of comment by many. Mr. Lamb's Orleans came up and the owner did not understand the officials to running and required what it was meant for evidently not recognizing the fact that the Mr. Swifte's De Dion's tire futes with a Anti-skin looked a little bit groggy, but he was not abashed at this."

Horse Doctors Discuss Automobiles.

Veterinaries are beginning to fear that their occupation is fast disappearing, more than is the horse himself. With the latter it is probably not a matter of much concern. The president of the Royal College of Veterinary Surgeons recently thought it necessary to cheer up his fellow practitioners, and accordingly handed out the following convincing arguments to show that there was nothing for them to fear:

"Automobiles have displaced a few animals, but in many cases the owners have returned to horses. The first six months' work of an automobile, when everything is new and taut in the way of machinery, has deceived people into believing that it was its permanent condition. Owners, however, would have a rude awakening and be glad to resume horse haulage; in fact, he knew many who had done so already," a statement that brought forth a sickly smile on the part of his assembled confreers.

How the Swiss Cops Swell their Salaries.

Switzerland supplies the very latest "stunt" in police hold-ups. The local speed limit in one of the cantons is three and one-quarter miles an hour, for every violation of which the minion of the law demands blood money, cash on the spot. This is five francs, about $1, so that, compared with the farce conducted before a justice of the peace or magistrate which ends in a fine many times that amount, the procedure is quick and to the point, and on the whole economical. The Swiss policeman is a state pensioner, and is allowed to collect his own salary à la Dick Turpin.

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HEATING THE MOTOR HOUSE

Perplexities that it Involves and Precautions that are Advisable or Necessary.

At this time of the year the problem of garage and stable heating and its probable or possible effect on the ever menacing fire risk comes up for consideration to the owner and the garage keeper as well. To some it causes little or no annoyance, for it has already been solved in past seasons, and the solution has proved to be so satisfactory that there seems to be no need for a change at the present time. To others it is a source of considerable worry, for it is by no means as simple as it at first may seem.

Not to go into details which have already been thrashed out over and over again in other years, it is sufficient to sum up the needs of a garage heating system very briefly. First, it should be so constructed that the unavoidable fumes of gasolene shall not in any way come into contact with flame or with metallic surfaces which are heated to any considerable degree. Second, the sources of heat on the various floors and rooms of the building should be so well diffused that there will be no intensely hot or intensely cold spots at any time, even during the very coldest winter weather. Third, the system should be both economical and flexible, so that it can be regulated to suit the conditions of a day which is extreme for the season without undue effort on the part of the operator, and should be capable of supplying just sufficient heat to maintain a uniform temperature at all times. Fourth, it should be so contrived as not to interfere in any way with the full amount of ventilation, which is essential to any building where inflammable materials are handled.

The rigorous application of the tests for all these conditions, of course, bars for all time the use of stoves and furnaces, either in rooms where cars are handled or stored, or in rooms which communicate directly with them; and also precludes the use of ill constructed and poorly insulated radiating systems. Also these considerations make necessary an added amount of care in the matter of the disposal of oily waste and refuse, which is likely to accumulate at all times, but which is far more dangerous during the time that the heating system is in use than in the warm weather. Then, too, it involves the careful disposition of all stores of supplies so that they shall not be subjected to a dangerous amount of heat.

Before the heating system of any garage is put into service for the first time in the fall it is most essential that it be gone over with great care to see that it has not suffered from rust or other injury during its period of idleness, and that the spaces behind radiators and heaters have not been used as convenient hiding places for old parts and dirty waste. In the tour of inspection all joints should be tested and connections made perfect, and all points where there is any danger that leakage or the high temperature which may be expected later on are doubly guarded from the peril of fire. At the same time it is well to look into the ventilating system, which, unfortunately, is totally inadequate if not wholly useless in most buildings which are used for garage purposes, to see that it is capable of taking care of the added amount of waste which the winter season is to put upon it and that it is in working order.

In this connection, too, it is well to sound a note of warning against the danger of overheating. It is not necessary to heat any garage or storeroom where cars are to be kept to a temperature greater than 55 to 70 degrees at any time. Not to exceed the maximum is to effect a considerable saving over the usual cost of operation of the average building. Yet in the cold weather there is a great tendency to raise the temperature to a point considerably above it, even to a point which is dangerous, all things considered.

To Make the Pit Safe.

An inspection pit which is properly constructed, is always provided with a ventilating flue which leads from the lowest point in its floor to an uptake preferably one of the main ventilators of the building, which has a strong draught; but even this precaution is not sufficient to guarantee the removal of all the gas which is likely to accumulate under a car when it is undergoing repairs, and therefore it is of the utmost importance that the repair man avoided the use of naked lights of any sort when at work. When a pit is not provided with any means of ventilation whatever, the caution becomes even more imperative. Recently, an English coroner and his jury were called to sit upon the case of a man who attempted to locate a nut which had been lost in such a pit, by the aid of a lighted match.

When Lighting the Lamps.

When lighting the lamps, it is well to remember that they will be less apt to smoke if turned very low, than if they are adjusted to the height at which they would be used were the machine not in motion. They should be allowed to burn for several minutes before the car is taken out on a run in order that they may have time to adjust themselves before the tremendous draught of the road is encountered.

New Use for the Torpedo.

As a dog and small boy preventive some motorists have adopted one of the latter's own weapons—the paper torpedo. It has the desired effect in every instance, and, moreover, has the saving advantage of being harmless, though somewhat startling.

USES OF THE WATER GAUGE

How it Serves to More than Tell the Tale of Water Circulation.

Though not of great importance, apparently, the use of a gauge connected with the water circulating system of the car yet proves itself of considerable benefit at one time and another, and is an accessory which the motorist can well afford to add to his machine. Its normal function of showing whether or not the cooling water is being properly circulated, though by no means vital, yet serves as a convenience in time of mishap, since it reveals a disordered condition of the system before the motor has time to heat, and in this way frequently saves a bad case of overheating when on the road.

Another use of the water gauge, in which service it proves to be a great convenience frequently, is in enabling the operator to judge of the speed of the motor without listening to it. This use is not to be appreciated until one has driven through heavy traffic a few times and had the roar of the streets so drown out the sound of the exhaust and the rattle of the valves that he is all at sea as to the manner in which his engine is performing and knows only by the "feel" of the clutch whether it is pulling properly and whether or not he is running on too high a gear.

Also, after a little practice, the driver learns to judge of the speed at which he is running by the position of the needle and the notch in which the gear lever is set the number of turns of the motor, of course, bearing a definite relation to the speed of the machine when the clutch is fully seated. Indeed, by careful calibration it would be perfectly possible to use the gauge as a speedometer by graduating it in accordance with a series of observations. But, at all events, in whatever capacity it be used, the observation of the water gauge soon becomes second nature to the driver, and its indications furnish a supply of information as to the performance of the motor which is only equalled by that furnished by the sense of hearing, and has the advantage of being readily interpreted, an advantage which mere sound alone does not always possess.

Use of Separate Cells.

Although the makers of the numerous electrical attachments which have been devised to be added to the car to increase its comfort and convenience, agree one and all that they can be connected with the batteries which are used for ignition, it is better for the motorist who has need of one or all of them to provide himself with a separate set of cells for their use. Those which serve the other purpose are far too important to have their serviceability in any way jeopardized.

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THE ENGINE AS A BRAKE

Advantages that Come of Such Availability and Means of Obtaining Them.

A matter which has been a ground for controversy among automobile drivers ever since automobiles came to be, is the question as to the correct method of arranging the brake and clutch control of a car which is equipped with sliding gear transmission. With some it is considered of the greatest importance that the clutch pedal be interconnected with the brake pedal and lever, so that the former is withdrawn on the application of the latter. With others, it is thought to be of equal importance that the two functions be kept separate from one another so that the compression of the engine may be used for the purpose of a brake under certain conditions.

Whatever may be the common practice of skilled drivers in this respect, the fact remains that it is a great convenience to be able to cut off the motor and use its compression as a brake when descending long hills, and that in those machines which are fitted with a variable inlet which can be wholly shut off at will a very powerful brake is thus obtained without any danger of heating or the failure which menaces the ordinary type of brake at all times, no matter how well it may be constructed. One of the English builders has gone a step further than most of his fellows, and arranged the valve mechanism of his motor in such a way that moving the accelerator up to a certain point simply throttles the inlet, while a further motion in the same direction serves to open the exhaust valves during each down stroke of the piston, the inlets remaining closed, thus transforming the engine into an effective air compressor.

By this means the work of the motor may be modulated at the will of the driver from its maximum to nothin, and it may then be used as a powerful and even brake without any of the jerky or spasmodic action which occurs when the ignition is cut out for the same purpose. Moreover, there is no danger of injuring the muffler, as may sometimes be done with a motor not equipped in this way, from the accumulation of unburned gases which have been exhausted by the inactive cylinders. When it is desired to use the power again it is applied evenly and in as gradual degrees as is desired, so that the control of a machine thus fitted is said to be more nearly like that of an electric than of any other form of gasolene machine.

Fully aware of the claims of advantage which the users of the principle make for any system in which the almost entire control of the car is vested in a single lever, but somewhat doubtful of its reception should be attempt to use this system on his own cars, that indefatigable enthusiast, Cecil Edge, of the British Napier company, put the question to the court of public appeal recently and wrote a circular to his clients asking for their opinion on the matter of clutch and brake interconnections and the use of the engine as a brake. Of the replies which he received 6 per cent of his correspondents were in favor of interconnection, 35 preferred to have the emergency brake connected with the clutch as a safeguard, and 59 favored the independent arrangement.

If put to the same test in this country it is hard to tell just what verdict would be given. A number of the manufacturers of standard machines here still adhere to the interconnection and to the interlocker upon the gear changing mechanism as well, and it is quite likely that among the users of those machines the consensus of opinion would not favor the arrangement. With other drivers, however, the other method has already found favor, and, although so far as is known, no machines of American manufacture are arranged to compress at every stroke, still by the manipulation of the spark the same general result can be obtained, but with a lesser degree of retarding effect upon the car.

Certainly, as saving on the wear and tear of brake surfaces and as a convenience, some such arrangement should prove of great benefit as applied to any machine. As to the matter of interconnection, with this, as with the gear interlocker, the time of its need seems to be passing away Time was when the "fool proofing" devices on the machine were of almost as great importance as the organs of transmission and power, but with the simplification of design, and still more with the general education of the public to a point where frenzied and hysterical manipulation of everything within reach on the slightest provocation is no longer to be expected that importance is seemingly on the wane.

Moreover, as the motion which converts the motor into a brake would be learned by the novice almost as soon as the motion of applying the brake, and would soon become second nature; and as, were the engine so governed, the non-removal of the clutch at the time of the application of the brakes themselves could effect nothing more than the stopping of the motor at the same time that the car was stopped; there would seem to be no further need for the interconnection once such a device as would effect this were brought to perfection.

Pillows for the Tonneau.

The latest luxury for the tonneau is the pillow. Now when my lady goes out to ride in her motor car she reclines not only on the soft leather cushions with which the seats are upholstered, but also on the soft silk downy affairs which have hitherto been part of the cosey corner, but which now may be observed in the up to datest of motor cars.

MAKING MORE MISCHIEF

Tinkering with Carburetters a Prolific Source of it—Where Troubles More Likely Exist.

Some motorists have a fancy for taking the carburretter apart on the slightest provocation and are never satisfied that it is not the source of trouble unless they have it reduced to its lowest terms and promiscuously distributed over the scenery. But the carburretter is not the prolific source of trouble that some accuse it of being.

When an involuntary stop makes an investigation necessary and the bewildered one has carefully gone over every other possible cause—in his own estimation—and found them apparently in good working order, it is as well to think twice before dismantling the carburetter. It is a delicate piece of apparatus at best, and when taken to pieces by one whose understanding of its principles is none too good, its adjustment is liable to become deranged, thus adding to the original trouble.

Books and articles galore have been written as to just what to do when the motor refuses to start, and until experience has superseded such primary directions, it is not a bad idea to paste them in one's hat. They all differ more or less, but are of necessity so similar in their essential elements that a composite may readily be made. It would be something like the following: First, see if there is anything in the tank; if it contains plenty of gasolene, do not take it for granted that it is reaching the carburetter, but look for stoppages in the piping; see that air inlet on tank, if of gravity type, is not clogged; next inspect all parts of ignition system if a test of battery or other source of current reveals no defect there. For mysterious and puzzling aberrations the ignition doubtless takes the palm, so it is well to make this inspection a careful one. Valves and valve springs, whether of the automatic or mechanically operated type, are likewise prone to get out of adjustment, and it is remarkable what a slight derangement in them will give rise to an alarming decrease of power. These directions would seem to indicate a lengthy process of inspection, but it will be considerably less than that required to dismantle the carburetter and reassemble it properly, particularly when the latter proves not to be the root of the trouble.

That ingenious inhabitant of the Windy City, one Paul Picard, who suggested that all careless pedestrians who got in front of automobiles should be arrested, recently fell into the clutches of the law himself. He was, however, given the benefit of a Chicago magistrate's bargain day, and got off for $25 and a bond of $200 not to do it again, instead of being fined a "century"—the usual "price."

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CASTING THE PISTON HEAD

Several Ways that Several Men Went About It and the Several Results.

A gas engine piston seems to be a very simple thing—that is, one of the trunk type that is a little more than twice as long as the diameter, says the American machinist. Who did the planning of the first ones that the foundry made does not appear to be on record, but they were made with the open end down. This was a very easy way to make them, as the pattern could be drawn out and the core stood down into a taper print that guided it right to place.

There is no reason to suppose that this method would ever have been changed if time had not revealed some defects arising from this way of doing things. If there was any dirt of any kind in the mold, of course it could always be found in the top end of the head as cast, and unfortunately this end was also the end that had to stand the heat and the effect of the explosion, and so could least afford to be defective in any way. It also seemed as if blow holes had a special liking for the space that should be occupied by spaces for the rings, when it was most desirable to have perfect sides on these same grooves. If the defects in these heads could have been always discovered before any work was done on them it would not have been quite so bad, but it was very seldom that any defect showed up until the grooves were being finished, and by that time nearly all the work was done on the head, and, worse than that, was the occurrence of dirt in the end of the head, as it might not show up until the engine was on the testing block and subjected to the heat.

Consideration of these things led the foundry foreman (he was not the one who was in charge when the first heads had been made) to change to way of making them. He did them the other way up. Instead of setting the core down in the mold he hung it up, and if there was any dirt in the head it was in the open end.

This was an improvement in many ways, but it still had some drawbacks, for while there were not so many bad heads in the machine shop, neither was it possible for a man to make one in the foundry in the same time that he could in the old way. In making them in the improved way it was necessary to use a three-part flask with one of the partings at each end of the head. This brought the core print in the cope, and it was necessary to tie the core up in it with wires. After it was made secure the cope was put onto the cheek, and then a man got down in under with a pair of calipers and proceeded to centre the core. This he did by pushing in one or other of the several wedges that went through loops in the various wires that were bedded into the print end of the core. After he had the core centred to his satisfaction, the cope and cheek were lifted onto the drag. If the core did not move during this last operation he might get a casting that was all right, but it was soon found that if the centring and wedging were not carefully done the core would be lopsided and would have to be thrown away. If there were any bad spots in the head they would usually be found at the open end, and they could often be gotten rid of by cutting back a little; but if they ran in too far to be cut out the head would have to be thrown away, for while they might not do any harm they were in the place in the head where they were the most conspicuous when the head was in use.

Owing to the fact that it was a job of considerable skill to centre and secure the core in a reasonable time and with certainty, the work on these heads had to be given to a good man, and good men come high; so, all things considered, the heads were an expensive job, and also one that was not liked by the men. Because of the known difficulty of centring the core accurately the machinists had to centre the heads by the core instead of by the outside; and so an extra amount of finish had to be on the pattern so as to have enough to allow them to true up. An extra eighth of an inch all around on a head as long as these means quite a lot of iron, and it takes an extra cut to get it off, or if it is taken off at one cut the feed will be finer but above all of these things was the necessity of getting good heads, and this method seemed to be the best way to get them. After a while there was a new man in charge of the foundry, and while he was a modest man and did not put up any claim of being smarter than his predecessors, he had different ideas on some things, and was willing to try to live up to his previous experiences and knowledge; and in trying to make things go as well as he could in his end of the establishment this head job was one of the things that struck him as having in it all the elements for improvement on some of the sizes.

After looking at the matter from various sides, a pattern was made that would do for two heads. A long piece was turned up that was the size of a head at each end, and a liberal space was left between them for core print. This pattern was parted lengthways through the centre. The core box was made so as to make the core for both heads in one piece.

With this arrangement it was thought that two heads could be molded almost as quickly as one, and much more quickly than one could be in the old way. After a few heads had been made it was found that the new way had some drawbacks. In spite of a long print between the two heads, it was found that the core would rise, and it was apt to rise more on one end than on the other, although the mold was poured from both ends at the same time. To counteract the tendency to tip the print was made longer, and chaplets were used to hold the core down so as to offset the desire it had to float.

This being a new way to do this job, it was watched closely for a time, and everything seemed to be all right and so easy that it seemed as though almost any molder could be sure of good heads, and, as is usual, the attention was shifted to some other part of the foundry work.

About this time the man in the machine shop thought his method of centring the heads could be bettered, and he changed it so that he was sure when he got through that they were really centred by the core; and about the time he had his changes finished it was found that more heads were being thrown out because of the core not being centred properly than was pleasant. In making the pattern for the new way of doing heads the finish had been reduced so that it was not much more than it would have been if it had not been necessary to pay any attention to the core. This had been done because the boss molder said that it was as much as he would need, but it did look almost as though he had been mistaken; however, he did not lose his nerve and give up, but he had a little gauge made so that the molder could try it and make sure he had the core clear down in the print before putting on the cope. He also had one made so that the ends of the core could be tried to see that it was not nearer to one end than the other. By these means he has succeeded in getting good heads without having excessive finish on them.

Care of the Brasses.

When a car is brought in from the road it is a very good plan to dust off the brass parts and coat them with polish, leaving it there until the machine is about to go out again, thus keeping all water from coming into contact with the bright surfaces and tending to tarnish them, and also protecting them from any moisture which may be in the air, and from the action of any vapors which may be injurious to their appearance. If the car is to be taken out on a rainy day, it is well to leave the coating in place and not to attempt to polish the parts as the action of the rain is apt to tarnish them. If liquid polish is used, it cannot be left on in this way as it is likely to cut the finish and do a good deal of harm, but with most of the preparations which are put up in the form of paste, and with plain tallow, the coating may be left on indefinitely without doing any injury whatever.

Why the Muffler Cut-out!

As the result of experience gained in the recent tourist trophy contest held in the Isle of Man, one observer predicts that muffler cut outs, or as they are termed by the Britisher, "exhaust ports," will figure more prominently on 1906 models than they have on their predecessors. Among the advantages cited for this feature, which has been discarded on American cars so long since that new recruits to the sport do not know what it is, the observer in question mentions that "it is useful to restrain the suicidal tendencies of dogs when the horn is ineffective."

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MAKING THE ENGINE ELASTIC

Some Novel Ideas to that End that are in Evidence in the Bruckert Motor.

Lack of constant torque or pull was a drawback recognized at an early stage in the use of the single cylinder engine for automobile purposes, and two, three, four and six cylinders were the steps taken in bringing about the solution of the problem. Two

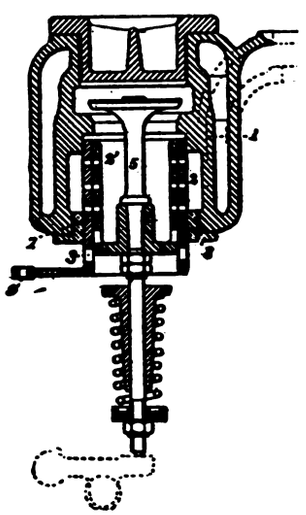


Fig. 1.

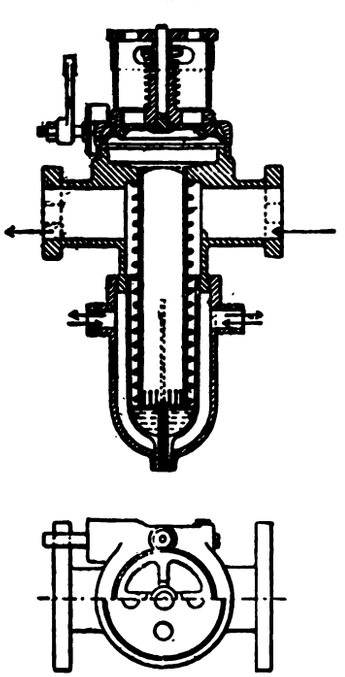


Fig 4.

were better than a single cylinder and three were better still, but it was not until the four cylinder motor was settled upon that smooth easy running, free from vibration, and with a constant pull on the crank shaft was obtained.

There are many who believe that this result is not attainable short of the employment of six cylinders, but going beyond four has been found to mean added complication

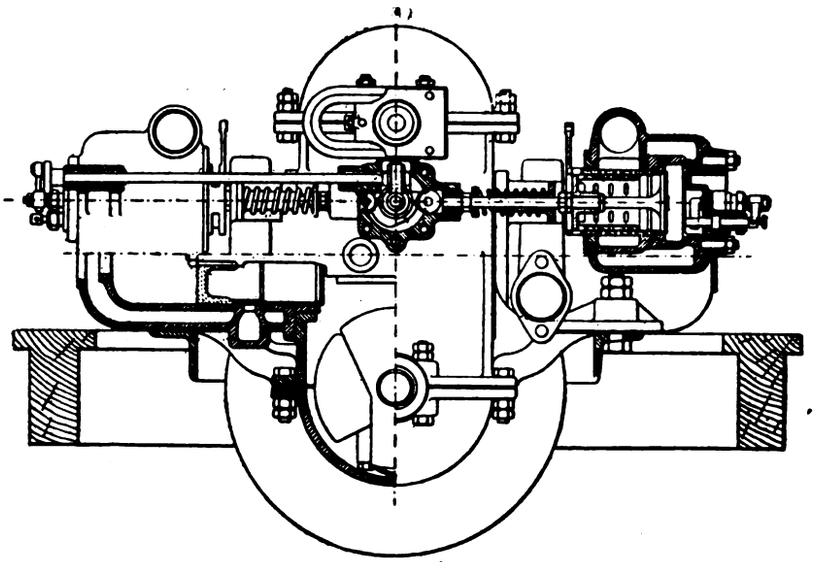


Fig. 2.

out of proportion to the benefit to be gained, so that the four cylinder motor is now the accepted standard. But despite this there are many who have looked for a solution of the problem in directions other than in the multiplication of the number of cylinders. Many more or less ingenious devices have resulted from these attempts and in some instances have been attended with fairly satisfactory results, notably by insuring a constant compression at whatever speed the engine may be running. In the majority of such cases, however, it has only been obtained at the expense of added complication or increased weight-items of greater importance than the slightly added flexibility brought about.

Nevertheless the problem is interesting in that its final solution augurs for the future an internal combustion motor having an amount of elasticity equal to that of the steam engine, so that the different devices introduced for overcoming the drawbacks of the present type are well worth consideration.

In the Bruckert motor, a French product, for instance, the expansion principle has been introduced with apparently satisfactory results, the makers claiming that constant daily use extending over a period of a year has shown their motor to be possessed of a degree of elasticity that permits of the elimination of the change speed gear. But then, of course, this is only one of many that have put forth identical claims to supremacy without in the end having come into general use.

However there are several novel features on the Bruckert that make it particularly interesting. The basic principle of its operation is the maintenance of a constant quantity of gas. The mixture admitted during

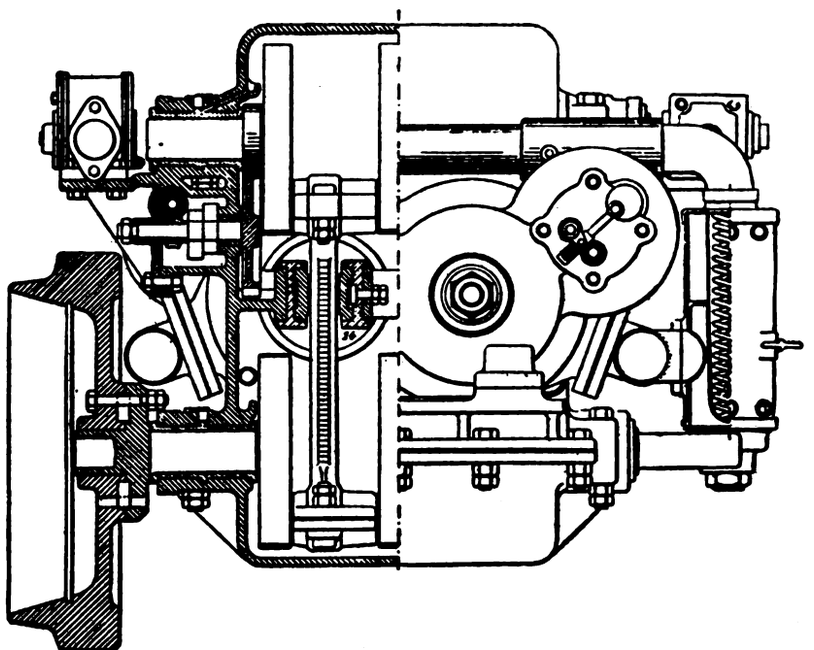


Fig. 3.

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the first part of the lift is very weak and when the valve is fully opened a rich mixture is then admitted and is compressed in the combustion chamber and exploded. The weak mixture then burns with an expansive action. It is evident therefore that the valve mechanism must admit the rich and weak gases in variable proportions according to the speed of the engine and the load, and this is done in a very ingenious manner, which may be followed by a reference to the drawings. Figure 1 shows a sectional elevation of the induction valve. Into the casting 1 which forms the body is screwed the ring 8 which receives a form of rotary throttle 2, actuated by the lever 9. This throttle has a number of ports coinciding with similar openings in the piston fixed to the valve stem 5. When the valve is actuated by the cam the piston slides up and down, thus admitting the required quantity of explosive mixture from the chamber 2 which is in direct communication with the carbureter. The lower part of the piston covers and uncovers the ports 3 communicating with the atmosphere. The proportions of explosive mixture and air are regulated from the maximum in one case to the minimum in the other by the lever 9. It will thus be seen that by varying the quantity of explosive gas, which naturally has not time to mix with the air, the force of the explosion also varies, and when running under a light load the charge has an expansive action. The principle is not new, since there is something similar to it in a Swedish motor, which runs under constant compression by maintaining the air and gas separate in the cylinder, but it is worked out in a manner somewhat different from that of the Bruckert engine and should apparently be more effective.

Like its induction valves the Bruckert engine is also of novel design. The cylinders are horizontal and opposed, but the pistons do not drive directly on the crankshaft. Instead there is a vertical shaft running in guides, the upper part revolving on a crank with bearings in the engine chamber and the lower extremity on the crank shaft, the throw in both cases being the same. This shaft is held between rollers on the ends of the pistons, so that as the vertical shaft is pushed back and forth it rotates around the cranks. If required, the quadrangular shaft, as it is termed on account of its travel, may drive two crankshafts. It is further claimed for this method of converting the reciprocating into rotating motion that it obviates the sidewise strain or thrust on the cylinder from the ordinary form of crank shaft, and the transmission effort is reduced to a minimum. Figure 2 which is a transverse section illustrates the arrangement of the cylinders and the valve mechanism, and the longitudinal section, figure 3, makes clear the method of transmission employed with the vertical shaft running between the guides 14. Figure 4 gives a section of the carbureter with automatic provision for admitting fuel and air, the gas circulating around a spiral chamber where it is warmed by the exhaust when necessary.

Causes of Crystallization.

Generally accepted theories of the cause of crystallization will have to undergo a revision if the recent discovery of Sir Purcell Taylor proves to be of the degree of importance of which it now holds forth promise. He has made it plain that the agencies which cause the formation of crystals are twofold.

In the first place, it was supposed that crystals were only formed when liquids were at rest and in a state of perfect quiet; but it has now been discovered that crystals are the result of a rhythmic motion taking place among the ultimate molecules of the substance, and that crystals may be formed under these circumstances in liquids, solids and gases.

This discovery explains the crystallization of metal in engineering structures, and which frequently results in the breaking of bridges, locomotive axles and the tunnel and propeller shafts of steamers. In the latter connection it is curious to note that the same discoverer should have been the inventor, some twenty-five years ago, of the built up crank shaft for steamers, which has almost entirely done away with the constant breakage at that point, and should now have discovered indirectly the cause of the continual breakage of propeller shafting. The discovery points also to the existence of a fourth state of matter beyond that of gas.

Automobile axles are but replicas of those on locomotives, although of a totally different design, and are subject to strains entirely out of proportion to their size as compared to those of their vastly heavier compere, which always runs on a smooth way, while the crank and propeller shafts are but miniature reproductions of those used on the largest steamers. Weight and size considered, add to which engine and rear axle are not in the same plane, so that the shaft works at an angle, and it will be evident that these also are subjected to proportionately greater strains.

De Dion's Electrical Governor.

Considerable difference of opinion exists as to the necessity for governing the motor of the car, and as things are at present, there are probably quite a majority of designers on the pro side of the question, but from time to time there are defections from the ranks. In addition to that old standby—centrifugal force, which according to the ideas of the builder is caused to act upon the throttle or ignition; air and water pressure are also relied upon for this purpose.

A patent, however, has recently been granted to the makers of the De Dion cars for a purely electrical system of governing. As already referred to, more or less resort has been made to retarding the time of ignition by means of the customary centrifugal governor, which may be termed a mechanically actuated electrical governor, but in the system under consideration the current itself supplies the moving force. The principle is a familiar one in electrical engineering usually being incorporated in a number of safety and overload devices in connection with generators such as circuit breakers and voltage regulators.

The source of current is a continuous current magneto primarily installed for ignition. As this is geared direct to the motor or otherwise connected so that it maintains a rate of speed relative to that of the motor, the voltage of its output will vary as the speed changes. Only a part of the current generated by the magneto is necessary for ignition purposes, the remainder acting on an electromagnetic regulator of the usual solenoid and plunger type, connected in shunt across the ignition mains. The soft iron core or plunger of the solenoid is controlled by a spring against the pull of which the current must act. Its motion is in turn transmitted to a device for advancing or retarding the ignition, though it may also be employed to act upon the throttle or as an exhaust valve lifter.

It is obvious that the apparatus being once adjusted for a voltage corresponding to a definite speed, the motor cannot exceed this speed because as the voltage tends to increase, the regulator begins to act and tends to prevent the speed rising. In order that the regulator may be adjusted for different speeds, varying the tension of the counteracting spring may be resorted to, or the solenoid may be provided with several independent windings, both methods being covered by the patent. The latter is naturally the more positive and has the further advantage of being capable of control from a distance as from the steering wheel. This is effected by the use of a commutator switch enabling the current to be diverted through any number of the windings or all. The strength of the pull or attraction exerted by each of these windings is of course, accurately calculated to effect a corresponding movement of the device controlling the ignition or throttle as the case may be. For instance, with the speed allowed by sending the current through the first section of the coil represented by one, the retardation and accompanying drop in speed may be one-half, one-third and one-quarter or in any other gradation of steps desired.

For Illumination of Closed Cars

One of the most recent developments that owes its inception to the widespread use of inclosed bodies is the provision of an extra accumulator for lighting the interior. In its latest bulletin the National Battery Co., of Buffalo, N. Y., calls attention to a special set of their "Unit" accumulators, which they are putting out especially for this purpose. It is composed of four cells in hard rubber containing jars, specially adapted to withstand breakage, a hard rubber bridge in the bottom being provided with a soft rubber lip that acts as a cushion on which the plates rest. They are intended for use with 8 volt lamps.

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ANNOUNCEMENT

The New Model 1906

Rainier

30-35 H. P.

has arrived. Note specifications below, then inspect it and try it. Experts who know Auto-cars from A to Z will be forced to admit that in beauty, workmanship, enduring strength and every other requisite of a perfect touring car, this magnificent new Rainier is THE American Automobile.

Engine.	30-35 H. P., 4 cylinders, water cooled.
Ignition.	Sims-Bosch Magneto—make and break spark.
Transmission.	Sliding train. 3 speeds forward and one reverse.
Rear Axle.	Bevel gear drive, clutch driven hub. Ball bearings.
Front Axle.	I Beam section. Ball bearings.
Frame.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.
Wheel Base.	104 inches.
Wheels.	Imperial whalebone, grade A 2nd growth hickory.
Tires.	Continental 34 x 4.
Valves.	Mechanically operated, inlet and exhaust interchangeable.
Carburetter.	Float feed, requiring no adjustment.
Brakes.	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
Body.	Full aluminum, double side entrance.
Equipment.	Two head lights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000.

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinder—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body.

Price, $3,500.

BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

The world's broadest and most liberal automobile guarantee. Landaulet bodies for immediate delivery. Limousines for October and November delivery.

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There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads—the Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

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MERCEDES CARBURETTER

Famous German Concern Makes a Significant Change—How the New Device Operates

One of the most notable features of the 1906 model of the Mercedes cars which has recently been completed will be found in the carburetter, and the principles upon which it is based are indicative of the marked effect that French initiative has on the design of the German car. It will be recalled that French experimenters have been studying the use of the multiple jet and multiple air inlet type for some time past, and many of the leading builders in that country have placed patents to their credit on the particular forms evolved by them, principally since the opening of the present year. It is accordingly not surprising that the carburetter of the new 70 horsepower Mercedes should be of this type.

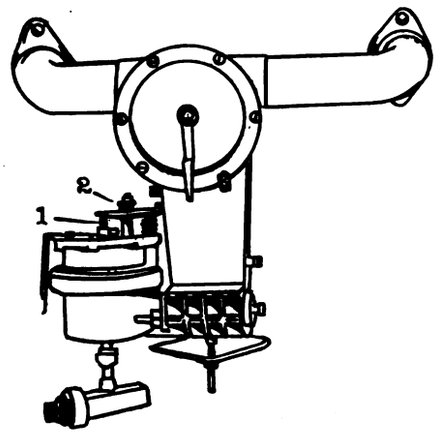


Fig. 1.

The carburetter complete, with its branched feed pipe ready to be fitted to the engine, is pictured in Fig. 1. The usual float feed chamber will be recognized by its form at the left hand side, but in connection with this a somewhat novel departure has been made. Protruding above the centre of this chamber appears the end of the usual central needle for automatically regulating the flow of liquid. This is indicated by No. 1. Just to the right of it will be noticed another needle somewhat similar in form, which is normally held up by a weak helical spring; this controls the flow of fuel to the jets further to the right and lower down. Between these two needles there is a pillar supporting a cam disk, 2, which simultaneously presses both needles down upon their seats. This disk is connected to a small lever on the dashboard, so that the flow of fuel to and from the carburetter is entirely under the control of the driver.

The four jets are so arranged as to receive an equal feed of liquid, but the size and number of outlets in each vary considerably. For instance, the first jet, or the one nearest the float feed chamber, is perforated by but two small holes, while the last, or fourth jet, at the right hand end of the group, is pierced by four openings of much greater diameter. The two intermediate jets have the same number and size openings, two in each case. The upper ends of the jets are entirely closed, the holes being drilled in the walls close to the top so that the fuel is sprayed out radially.

The mixing chamber, which is directly above the jets, is solid with the branched induction pipe, and its upper end is widened and made circular in order to house the rotary throttle valve. It is divided vertically into four distinct compartments, one above each jet, and each compartment terminates at its upper extremity in the cylindrical throttle valve casing. The entire mixing chamber is water jacketed, fed by pipes connected at the unions shown at 5 and 6, Fig. 2, and the four compartments are entirely open to the atmosphere beneath, as shown in both illustrations. At their upper ends the four compartments form ports 7, 8, 9 and 10, varying very greatly in size, and which are covered and uncovered by the rocking inner member of the throttle valve, a separate view of which, No. 11, is given at the right of Fig. 2. The extreme left hand opening, No. 7, which corresponds to the smallest jet of the four, is but a mere slit, the others increasing in size by about 50 per cent until the largest, likewise corresponding to the largest jet, is reached. Surrounding the smallest jet the mixing passage is small in section, but around the other three jets the chambers are of considerable area. A powerful injective action is accordingly obtained when the first and smallest jet is in operation alone, and ample carburetion can thus be maintained even though the amount of air admitted be reduced to the minimum.

In action the operation of the throttle valve brings the curiously shaped port, 12, of the moving member, 11, around to the left, so that it communicates with the first, or slit-like, port at the left of the series of openings corresponding to the jets beneath before any of the others are opened. With the engine running light, the required volume of mixture can then be obtained to a nicety by altering the relative position of the port and the slit, this being accomplished from the steering wheel by means of a lever connected to the crank operating the throttle valve and shown hanging down from the centre of the casing in Fig. 1. To obtain more power, the valve is moved further to the left, when the V shaped edge, 13, of the moving member begins to uncover the largest port, 10, at the same time as the port, 12, gradually reduces the feed through the slit or first port at the left of the series. Further movement opens the large port fully, and then uncovers the remaining ports, 9 and 8, consecutively. The jets, one after the other, are thus successively brought into action, until whereas at first only the smallest was in operation, all three large jets, 8, 9 and 10, are supplying fuel to the engine. All the air required for the mixture enters at the open ends of the mixing chambers, coming up around the metal dish-like fitting placed beneath the trunk from which the jets spring.

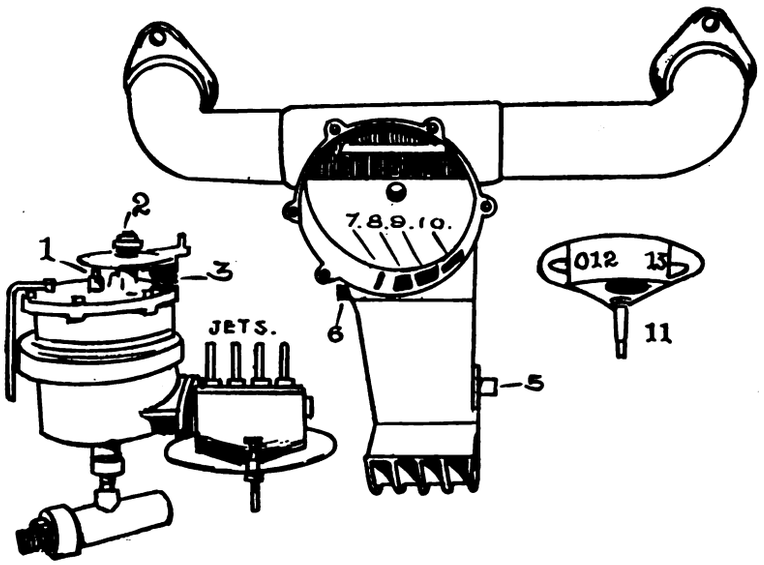


Fig. 2.

Care in the Paint Shop.

In the paint shop, as in the other factory departments, the much preached but little practised rule, "A place for everything, and everything in its place," should be inviolate. Sponges and chamois should be kept in dry places. Drop cloths should be numbered and size given in each corner. Shellac brushes should be washed after being used, and kept in a drawer or box, and if needed you will simply have to place them in alcohol or shellac a day before. New or partly used brushes should never be placed in water; the only proper way to keep them in good condition for any length of time is to place them in a large pot or keg of mixed color, just enough paint so that the bristles will not touch the bottom. Varnish, enameling and staining brushes are best kept clean and straight by suspending them in oil, either with the patent brush holder or by boring holes through the handle and held with a wire.

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How the Sultan Was Converted.

How the Sultan was converted to automobiling makes a diverting tale, and shows that this more or less well known individual adds to his many other bizarre qualities that of the canny Scot. He was willing to take a car as a present; he would not look a gift automobile in the gasolene tank, but paying for one was another story entirely—that was where his enthusiasm dwindled to the vanishing point. The Sultan is always reported to have had the greatest horror of automobiles of every kind.

According to a cable from Paris, the Khedive of Egypt is responsible for the conversion. The latter dignitary while recently in the French capital purchased two high powered, luxurious touring cars, and the manufacturer promised him a third as a gift if he could induce the Sultan to become the purchaser of a car of the same make. Some time after his return the Khedive wired back that he was unsuccessful in persuading his Turkish highness to buy a car, but that he would take one as a gift. The manufacturer cabled his acceptance of the arrangement, considering it as first rate advertising. Before he could be induced to enter the car, however, the ruler of all the Turks had every part of the car dismantled and its use explained to him, with a view to proving its solidity as well as the absence of anarchistic or other mysterious and noxious devices.

"Seventy miles in 3 hours 42 minutes—from Springfield (Ill.) to Peoria (Ill.)—raced the big racing autos of Pete Weast and Alderman Simmons and Simmons won by the bare margin of two minutes." This, in itself quite enough, is the interesting dispatch from Peoria of a "remarkable" feat.

The Undertaker's Little Joke.

Many are the queer advertising methods employed, but the most incongruous has been perpetrated by a Maine undertaker. To each automobile owner whose name he was able to secure he sent the following card, with the admonition that it be tacked on the dash:

"Take position on seat, turn on steam, open gauge wide. See that safety valve is set at 1,000 pounds and then notify (over)

The other side read:

"J. A. Ferris & Sons, undertakers and manufacturers of coffins and caskets. This side up!"

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The Week's Patents.

801,730. Lubricator. Herbert M. Lofton, Atlanta, Ga., Assignor to National Investment Company, Savannah, Ga., a Corporation of Georgia. Filed October 29, 1904. Serial No. 230,503.

Claim.—1. The combination with the drive-shaft, and the axle shafts geared together, of the casing inclosing said parts and provided with lateral tubular portions encircling the axle-shafts and with inner bearings for the said axle-shafts, the outer bearings for the axle-shafts provided at their lower sides with reservoirs for the oil, and with ports leading from the bearings to said reservoirs, sleeves encircling the axle-shafts and extending between the inner bearings and forming conduits through which the oil may pass from the inner bearings to the outer bearings, return-channels for the oil being provided between the reservoirs at the out bearings and the casing, the inner and outer bearings for the drive-shaft, a sleeve extending between said bearings for the drive-shaft, a sleeve extending between said bearings, and a return-channel between the outer and inner bearings for the return of the oil supplied to the outer bearings, substantially as set forth.

801835. Ball-Bearing. Rudolph H. Apelt, Roxbury, Mass. Filed February 25, 1905. Serial No. 247,318.

Claim.—1. In a ball-bearing, the combination, with an outer bush provided with ball-races at its end portions, of two inner sleeves provided with ball-races at their outer end portions and screw-threaded portions at their adjacent ends which engage with each other said sleeves having also central holes provided with serrations, balls arranged between the opposed ball-races of the said sleeves and the said bush, and a shaft which engages with the said serrated holes of the sleeves.

801,850. Electrical Distributer for Gas-Engines. Lee S. Chadwick, Ridley Park, Pa. Filed March 26, 1903. Serial No. 149,637.

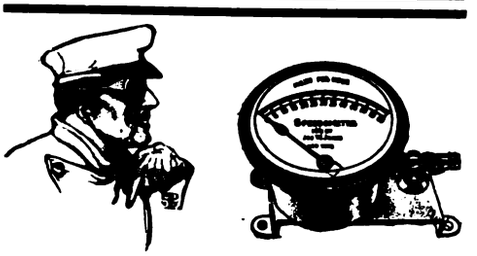
Claim.—1. In an electrical distributer for gas-engines, in combination, a distributer-body having a periphery comprising a contact-segment of conducting material connected with one pole of the circuit, a segment of conducting material beyond the contact-segment and insulated from the circuit, a narrow strip of insulation between the segments of less width than the width of the contact-face of the brush, the distance between the contacting ends of the brushes being greater than the length of either of said segments, thereby presenting a substantially continuous periphery of conducting material, while excluding a path for the current from one brush to another while either brush is simultaneously in contact with the contact-segment and the adjacent segment.

801,852. Vehicle-Wheel. Alfred Cousen, Detroit, Mich. Filed April 4, 1904. Serial No. 201,608.

Claim.—1. In a wheel, the combination with an inner and an outer rim, of springs forming the sole connection between said rims and consisting of a flat strip of spring metal bent to form S-shaped portions to resist the radial movement of one rim toward the other and intermediate portions each composed of a flat strip of spring metal having double bends intermediate its ends and connecting the inner end of one S-shaped portion with the outer end of the next S-shaped portion, and means for securing the springs to the inner and outer rims at the inner and outer ends of the S-shaped portions.

801,898. Electric Power-Transmission Device. Herbert McNulta, Anaconda, Mont. Filed December 10, 1904. Serial No. 236,369.

Claim.—1. A motor-vehicle consisting of the combinations of a prime mover, run-

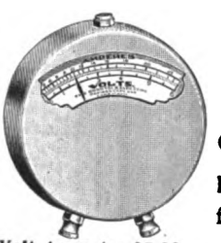


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ning at approximately constant speed, an alternating-current generator, one element of which is driven by said prime mover mechanically, a shaft to be driven, carrying the other element of said generator, an alternating-current motor whose one element is fixed to said shaft, and whose other element is stationary, and a transformer electrically connected between said generator and said motor, for varying the electromotive force supplied by said generator to said motor.

801,927. Fuel-Mixing Device for Gas-Engines. Harry J. Smith, Buffalo, N. Y., Assignor to the Alberger Company, Buffalo, N. Y. Filed October 11, 1901. Serial No. 78,342.

Claim.—1. A fuel-mixing device, comprising an air-supply, a gas-supply, two cooperating volume-controlling members, one of which is movable-relatively to the other and one of which has a port, and a separating member arranged between the air-supply and the gas-supply and entering said port and having its edge flush with the joint between the last-named members, said separating member and the cooperating volume-controlling member being movable one relatively to the other for varying the proportion of air and gas, substantially as set forth.

801,934. Universal Joint. George W. Toney, Waltham, Mass., Assignor to Frank Burgess, Quincy, Mass. Filed February 27, 1905. Serial No. 247,407.

Claim.—1. A universal joint comprising in its construction a ball provided in its periphery with an annular groove, a yoke consisting of an annular ring portion located in said groove and a flat shank portion, said shank portion divided in two parts, and a sleeve fast to said yoke.

802,005. Metallic Tread for Resilient Tires. Wallace C. Lyon, Hyattsville, Md. Filed December 16, 1904. Serial No. 237,173.

Claim.—1. A tire-protecting device comprising a series of interchangeable links, each having a hook at one end and a pin at the opposite end with an indenture adjacent to said pin, the inner face of each link being concaved, said links adapted to be interlocked and form an endless chain, as set forth.

802,009. Spring-Wheel for Vehicles. Digby C. Master. Helouan, near Cairo, Egypt. Filed February 9, 1905. Serial No. 244,935.

Claim.—In a spring-wheel for a vehicle the combination of a hub, a number of sleeves radiating from the hub, a rim, and flexible spring-spokes bent at the outer end which can move slightly in the rim and placed back to back in pairs at the inner ends which fit into the sleeves.

802,029. Die for Forming Radiator-Disks. Benjamin Briscoe, Detroit, Mich. Filed October 17, 1904. Serial No. 228,868.

Claim.—1. The combination with cooperating punch and die members for cutting a sheet-metal disk, of a stationary punch arranged centrally within the die member having its upper end of pyramidal form, with its apex below the plane of the cutting edge of said die, said movable punch being provided with a recess for receiving said stationary punch, a member complementary in form to said movable punch and surrounding said stationary punch and movable thereon, and a yielding support for said member.

802,038. Carbureter for Hydrocarbon-Engines. Franklin W. Hagar, Nashville, Tenn. Filed April 19, 1904. Serial No. 203,863.

Claim.—1. In a carbureter, a mixing-chamber having an open end, a main air-inlet port, means for controlling the latter, a suction-chamber arranged within the end of the mixing-chamber, contracting the area of the latter, and having ports discharging transversely of the contracted portion thereof, a sleeve disposed axially of the mixing-chamber with its bore communicating at one end with the suction-chamber and at its opposite end with the exterior of the carbureter, a valve for controlling the communication between said bore and the suction-chamber, and a feed-duct in communication with the suction-chamber, substantially as described.

802,050. Elastic Wheel. Carl M. P. G. Lungwitz, Cassel, Germany. Filed September 3, 1904. Serial No. 223,193.

Claim.—As an article of manufacture, a wheel having a felly consisting of two concentric rings arranged with an interposed space, ring-like disks arranged on opposite sides of the wheel, said disks being secured to the outermost ring and having portions arranged on opposite sides of the innermost ring and bridging said space between the two rings, a floating ring arranged in said space having its opposite edges coacting with said disks, whereby it is prevented from lateral displacement, and springs interposed between the felly-rings and said floating ring substantially as described.

802,118. Vehicle-Wheel. Gustav A. Schoche, Dresden, Germany. Filed June 26, 1905. Serial No. 266,987.

Claim.—1. A vehicle-wheel comprising in combination with the axle and ball-bearings, the hub-sleeve, a trough-like annular extension on either end of said sleeve with alternately-spaced perforations for the spokes, a two-part, slantingly-bored clamping-ring in said hub-sleeve extensions, means to temporarily clamp these two parts together, a wedge-ring in said hub-sleeve extension, flattened seat portions on said wedge-ring, means for tightening said wedge-ring within said extension, and shoes or sockets on the felly to receive the outer ends of the spokes, substantially as described.

802,125. Valve Gear for Explosive Engines. Ernest R. Uhlin, McDonald, Pa., assignor of one-half to Barrett D. Tillinghast, McDonald, Pa. Filed December 15, 1903. Serial No. 185,251.

Claim—1. The combination, with an explosive engine, of means for controlling the admission of an explosive mixture and the escape of spent gases to and from the cylinder, comprising a casing in communication with the cylinder, having a gas inlet port, an air inlet port and an exhaust port, a single tubular valve closed at its outer end and located within the casing controlling said ports and the communication between the casing and cylinder, and means for operating the valve.

802,146. Changeable Speed Gearing. Oliver W. Johnson, Cleveland, Ohio. Filed June 29, 1904. Serial No .214,666.

Claim—1. In changeable speed gearing, the combination of a power driven shaft, a second shaft coaxial with the power driven shaft and adapted to have the power taken therefrom for operating the machine or part to be driven, a series of power transmitting shafts grouped about the power driven shaft, speed gear trains between the power driven shaft and the series of power transmitting shafts, a master wheel connected with the aforementioned second shaft for rotation therewith, gear wheels loose upon the respective power transmitting shafts and in mesh with the master wheel, and means for connecting the loose gear wheels with their supporting shafts to impart the required speed to the master wheel, substantially as described.

802,159. Apparatus for Molding Rubber Tires and the Like. John L. G. Dykes, Chicago, Ill. Filed September 6, 1904. Serial No. 223,473.

Claim—1. In an apparatus for molding rubber tires and the like, the combination with a mold having a laterally apertured delivery nozzle and means for forcing plastic material therethrough, of means for guiding and directing a covering strip of non-plastic material drawn through said aperture by frictional contact with the surface of said plastic material as the latter is expressed through said delivery nozzle, substantially as described.

802,175. Clutch and Changeable Speed and Reversing Gear Mechanism. Frederic G. Seeley and Leopold Tolch, London, England. Filed May 2, 1904. Serial No. 206,095.

Claim—1. In an apparatus of the class described, a stationary casing, a driving shaft passing into one end thereof, a driven shaft passing into the other end thereof, a gear box loosely mounted on the inner ends of said shafts, a gear wheel secured to the inner end of each of said shafts within the said box, other gearing in said box and supported thereby and by which the last named wheels are connected, an annular clutch member secured to said casing at the end through which the driven shaft passes, a circular clutch member secured to the driven shaft within said casing, an annular member mounted between said clutch members and adapted to operate in connection with both, and means for moving the annular brake member toward and from the gear box and securing it thereto, substantially as shown and described.

802,216. Carburetter for Hydrocarbon Engines. John H. Johnston, Paris, France. Filed September 14, 1903. Serial No. 173,102.

Claim—1. In a carburetter for explosion motors, means for regulating each of the fluids of the combustible mixture, operated directly by the suction of the motor, each means comprising vessels communicating with each other and containing a mass of mercury, a communication between one of the said vessels and the suction tube, and a passage for one of the said fluids regulated by the displacement of the mercury which oscillates in the vessel in concordance with the greater or less suction of the motor.

802,259. Changeable Gearing. John M. Billingsley, Billingsley, Tenn. Filed December 18, 1903. Serial No. 185,653.

Claim—1. A variable speed mechanism, comprising a driving shaft having oppositely disposed grooves arranged therein throughout a portion of its length, a driven shaft having grooves arranged therein throughout a portion of its length, gear wheels loosely mounted upon each shaft, and means operating simultaneously within said grooves for interchangeably keying oppositely disposed wheels to their respective shafts.

802,299. Universal Joint. Vladimir Lorenc and Victor Lorenc, Berlin, Germany. Filed November 30, 1904. Serial No. 234,927.

Claim—1. In a universal joint, the combination, with a movable element having bifurcated ends, of a ball pin arranged to be embraced by the bifurcated ends and provided with ribs, and means for adjusting said ribs radially of the ball pin.

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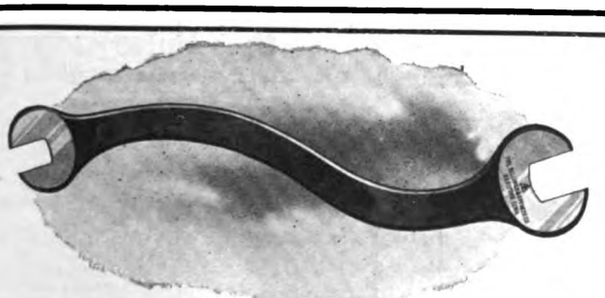
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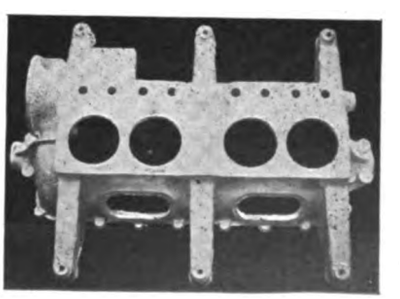
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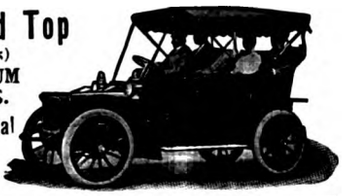
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To Operators of Steam Cars:

Write us for printed matter on the **NELSON STEAM WATER PUMP**, the only positive high pressure boiler feed.

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SIMPLY BUILT. SIMPLY RUN.

PRICE, $1500.

Air **cooled.** 16 horse power **developed.** Beautiful in design and finish. **Easy riding.** Speedy. **Durable** and **dependable.** We build it.

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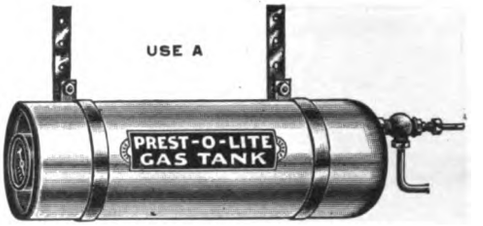
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AND AVOID ALL LAMP TROUBLES.

No cleaning of generators; No water needed; Light always ready; Light steady on rough roads; Never wears out; Tips never clog; Economical; No carbide supply to carry; Burn as many lights as desired from one tank; No waste; Safe—No leaking gas; Nothing to freeze; No attention; No odor.

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never bother the owner of an **Apple Automatic Sparker.** It is a perfect storage battery charger. Easily applied to any automobile, launch or stationary engine. Write for information. **Dayton Electrical Mfg. Co., 91 Beaver Bldg., Dayton, O**





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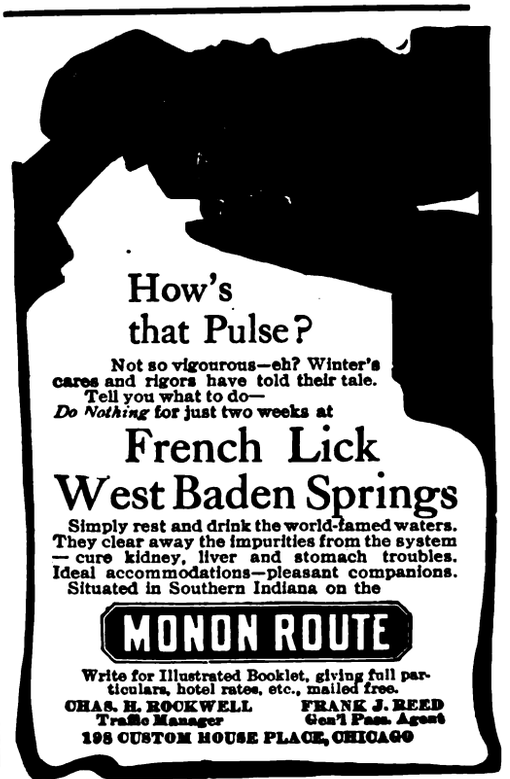
and buy "Sta-Rite" ignition plugs. We have plugs for every possible need. 47 sizes. Porcelain, **$1.50;** Mica, **$1.75.** Advise name of car and secure style best adapted. It makes a great difference.

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HOODS EASTERN FACTORY, NEWARK, N. J. TANKS



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Not so vigourous—eh? Winter's cares and rigors have told their tale. Tell you what to do—
Do Nothing for just two weeks at

French Lick West Baden Springs

Simply rest and drink the world-famed waters. They clear away the impurities from the system — cure kidney, liver and stomach troubles. Ideal accommodations—pleasant companions. Situated in Southern Indiana on the

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Enclosed find $2.00 for which enter my subscription to

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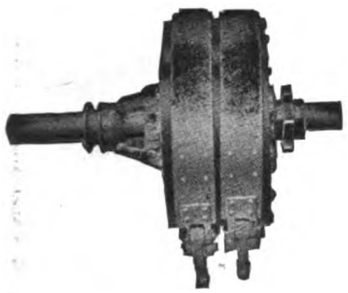
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What is more important than selecting the right one? We are specialists in that line. We have the know-how, the facilities and the prices.

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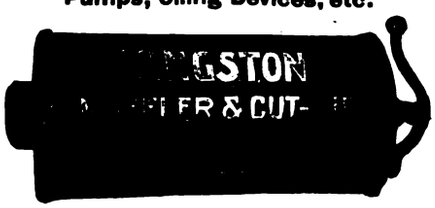
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Carburetors, Mufflers, Spark-Coils, Spark-Plugs, Steering Wheels, Pumps, Oiling Devices, etc.



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An instrument that will enable you to determine the grade per cent. you are ascending or descending.

Sent postpaid on receipt of price, $1.50.

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AMETER RELIABLE VOLTMETER

$3.50

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PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and, growing bolder, bursts forth in one pure sheen of grandeur.

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"Makers of Smart Automobile Lamps."

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We make parts from your own design from either brass or aluminum

On Contract Basis.

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DIAMOND CHAINS

OUR CHAINS OUTWEAR ALL OTHERS

Replace your worn out chain with a **"DIAMOND,"** which fits any standard sprocket.

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WITHERBEE BATTERY

Solves the Ignition Problem

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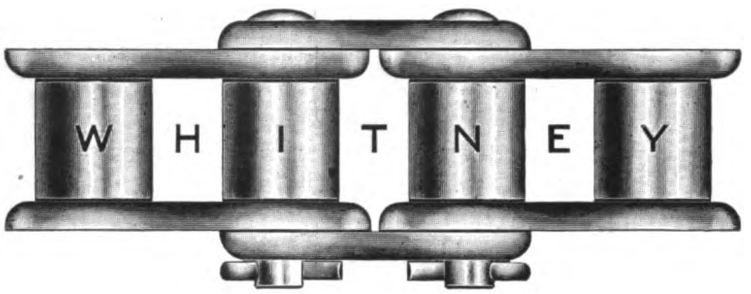
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Watch the efficient double chain drive. It gives greater strength with less weight and has many other advantages.

The New 1906 Model "Whitney" Chains on certain cars with double chain drive are absolutely noiseless and are breaking all previous records for efficiency.

If spockets are correct the results will surprise you.

No Noise

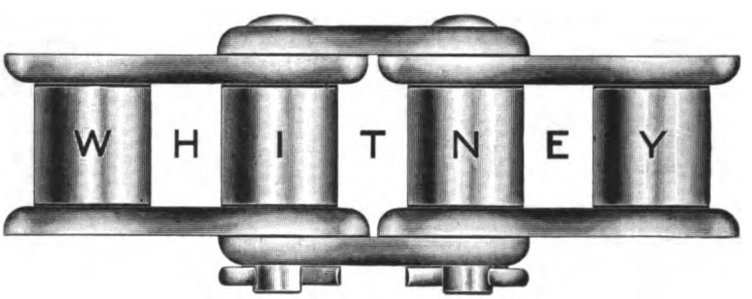


No Trouble

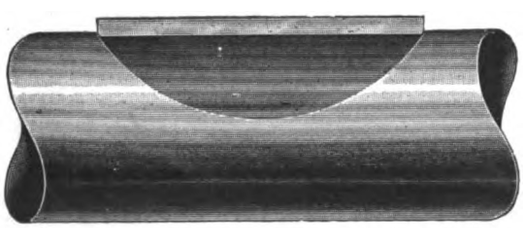
1906 Model "Whitney" Detachable Roller Chains—Patented.

"Whitney" Standards for dimensions of Roller Chains have been adopted by most of the Leading American Car Builders and we are pleased to announce they have at last been accepted by other Chain Manufacturers at home and abroad. For years we have recommended our efficient and uniform Standards for pitch sizes and diameters of rolls, and although these Standards have heretofore been strongly opposed by certain Chain and Automobile Makers, we believe the ideal condition is now near at hand. For 1906 Model Cars of all styles and weights, six sizes of chain can take the place of over thirty sizes used in the past.

New 1 Inch Pitch



Full Size



The Woodruff Patent System of Keying has been adopted by most of the Leading Automobile Makers.



THE WHITNEY MFG. CO., Hartford, Conn., U. S. A.

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There are reasons why

MORGAN & WRIGHT TIRES ARE GOOD TIRES

Reason 4

RESILIENCY.

¶ First, last and all the time an auto tire must be resilient—springy—full of life.

¶ A good tire must, together with its toughness, strength and proper fabric-construction, be sufficiently pliable to give comfort to its user over all kinds of roads.

☞ **Two causes tend to produce resiliency in Morgan & Wright tires: an uncommon amount of pure rubber stock and a fine element of elasticity that is contributed by our special fabric-construction.**

¶ Users of these tires say they are a "happy medium" between tires that are two hard for comfort and those that are too soft for service.

¶ They are good tires because they meet every requirement of good tires.

MORGAN & WRIGHT, Chicago.

PHILADELPHIA. BOSTON. CLEVELAND. DAYTON. DETROIT. NEW YORK. SYRACUSE. MINNEAPOLIS. ATLANTA. SAN FRANCISCO. DENVER. ST. LOUIS. LOS ANGELES. PORTLAND, ORE.

POPE Waverley ELECTRIC AUTOMOBILES

FALL AND WINTER PROFITS INCREASED.

AGENTS who handle both gasoline and electric cars find the fall and winter season, when trade is quiet in gasoline automobiles, just the season for pushing the sale of Waverley Electrics, especially the Station Wagons and Coupe Top Chelseas—the electric business supplements so nicely the gasoline trade that the wise ones reap the profit and keep their force busy throughout the year instead of passing through a dull season, when the demand for gasoline cars slackens.

We have the convertible Coupe-Top Chelsea ready for delivery. The top removed makes it a stylish Electric runabout.

Catalogues on request.



Coupe-Top Chelsea, Price $1450.

POPE MOTOR CAR COMPANY, Indianapolis, Ind.

NEW YORK CITY, 1733 Broadway
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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
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G & J TIRE CO.

Indianapolis, Ind.

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DON'T EXPERIMENT
Just Sell
THE FORD

Mr. Agent:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the agent who sells a car not up to standard loses both *prestige* and *reputation.*

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown.*

You know the general rush to the Ford exhibit at the shows, and how they all ask, "*What has Ford this year?*" plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before, except that there is certainly good business ahead for the Ford agent in 1906, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR COMPANY, - - - Detroit, Mich.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO.

Canadian Trade supplied by THE FORD MOTOR CO., of Canada, Ltd., Walkerville, Ont

The BAKER ELECTRIC

The Baker Electric Depot Carriage,



The Most Elegant of all Electrics.

ALSO

RUNABOUTS, STANHOPES, SURREYS, ETC., ETC.

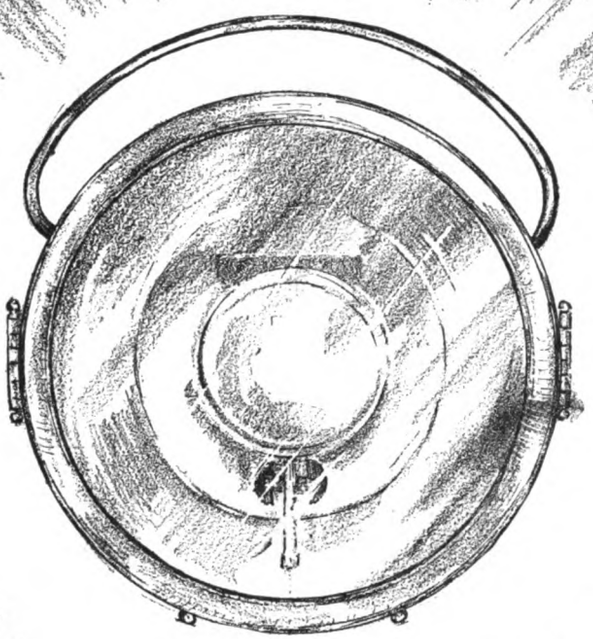
WE ARE READY TO TALK BUSINESS.

THE BAKER MOTOR VEHICLE COMPANY, CLEVELAND, OHIO.

C. B. RICE, Broadway and 58th Street, New York Agents.

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THE SHADES OF NIGHT ARE FALLING EARLY

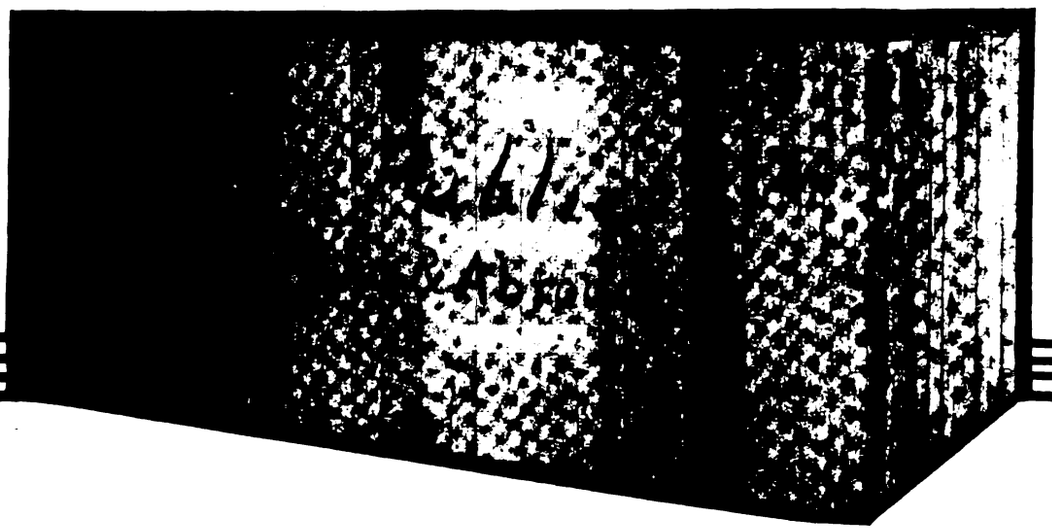


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THE SOLAR
LIGHT YOUR WAY

BADGER BRASS MFG. CO., Kenosha, Wis.

WRITE FOR BOOKLET or ASK YOUR SUPPLY MAN NEW YORK OFFICE, 11 WARREN ST.

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TO BE UNCRATED NEXT WEEK.

The Announcement

of our

1906 Models

will be

Sensational.

OLDS MOTOR WORKS,

Lansing, Mich., U S. A.

Member A. L. A. M.

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TALKIN' OF THE COST OF UP-KEEP

The Royal Tourist cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs. Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little touring car or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is made and put together with proper care. Money is freely spent for best materials. That's why!

That is also the reason why we were able to roll our car over in the Vanderbilt Trials and then finish among the first.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 432 South Fifth St., Minneapolis; AUTOMOBILE SUPPLY CO., Lim., 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

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"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U S. A.

THE Modern Car.

40-45 H. P. Double Chain Drive.

112 inch wheel base.

Individually cast cylinders. Battery and high tension magneto ignition.

Individually designed bodies.

PRICE, $7,500.00.

28-32 H. P. Double Chain or Direct Drive.

102-inch wheel base.

Battery and low tension magneto ignition.

Bodies to your own taste.

PRICE, $4,000.00.

☞ *U. S. sole representatives of Societe L'Oleo plugs for battery and magneto ignition. Absolutely soot-proof.*

THE VIQUEOT COMPANY,

LONG ISLAND CITY, N. Y.

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should *not* buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the *two* cycle two cylinder Elmore engine.

Understand—the *two* cycle two cylinder Elmore engine produces *two impulses every time the fly-wheel turns.*

As you know, the two cylinder *four* cycle furnishes only *one* impulse every *fourth* time the fly-wheel turns.

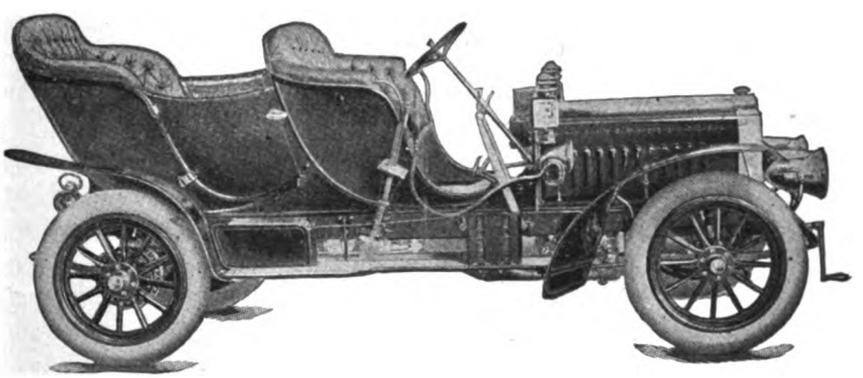
In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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QUEENS



ONE OF OUR THREE NEW MODELS

Motor.	4 cylinder—26-28 h. p.
Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder touring car with detachable side door tonneau list at $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's interesting.

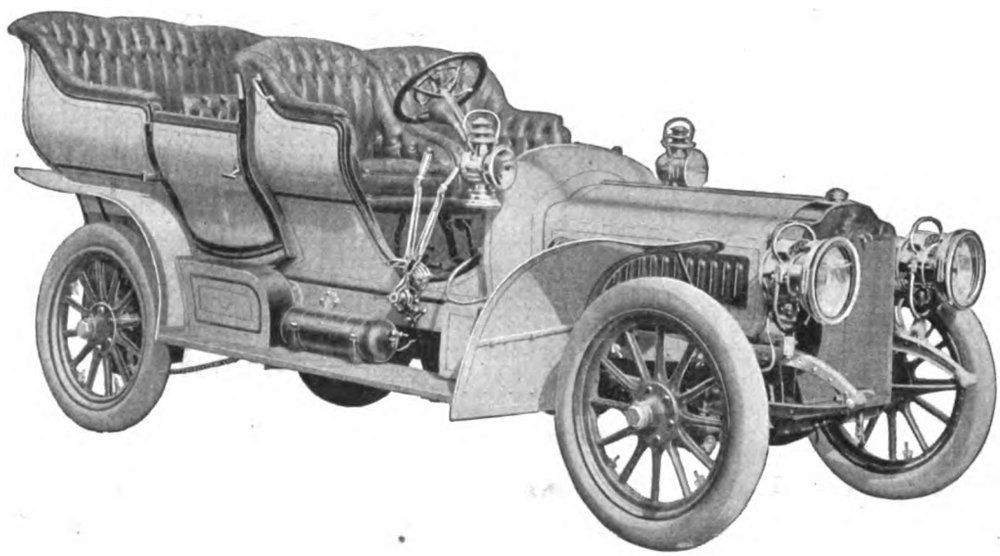
C. H. BLOMSTROM MOTOR CO.,

DETROIT, MICH.

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THOMAS

1906



In spite of the fact that we are completing the finest fire-proof factory in the world, with a capacity of one thousand high powered automobiles per annum, it looks very much as though last year's scramble for Thomas Cars was going to be repeated.

Last year, premiums of all the way from $150 to $750 were refused for Thomas cars. We were likewise compelled to refuse orders for 50% of our capacity.

The only sales we lost were those of a few unposted persons here and there, who couldn't see how so much value could be sold at so reasonable a price.

That idea was demolished last season, and the fact that the 1906 Thomas is far costlier than the 1905 model without a change in price makes it unquestionably the greatest automobile value in the world to-day.

In brief, what you have to consider is a car which demonstrated last year its superiority to cars costing from $1,500 to $4,000 more money.

A car with 50 H. P. (actual), which is quieter than it was last year; smoother than it was last year; has larger motors; is far more beautiful; far more comfortable, seating five or eight, all fronting forward; with perfect clutch; perfect control; four-speed Hess-Bright ball bearing transmission; four powerful brakes; forgings throughout; material guaranteed to be the costliest made; fifteen Hess-Bright bearings and one roller.

Analysing this 1906 offering of power, beauty and the highest degree of construction, and bearing in mind what I have said to you about the probability of a greater demand than we can supply even with our increased capacity of 1,000 high powered automobiles per annum —do you not think it advisable for you to investigate the Thomas without delay by consulting our nearest representative?

E. R. THOMAS,

for The E. R. Thomas Co., 1,416 Niagara St., Buffalo, N. Y.

Members Association of Licensed Automobile Manufacturers

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FOR COMMERCIAL MOTOR VEHICLES



Diamond
SIDE WIRE SOLID TIRES

THEY STAY ON.

The rubber is strictly our own stock.
It combines remarkable resiliency and the finest wearing qualities.
These tires are made in both butt-end and endless patterns.
Our literature concerning sizes, weights, prices, etc., will interest you if motor trucks or other commercial vehicles appeal to you in any way.

THE DIAMOND RUBBER COMPANY,
AKRON, OHIO.

BOSTON—174 Columbus Ave. DETROIT—310 Woodward Ave. SAN FRANCISCO—608 Mission St.
PHILADELPHIA—304-306 No. Broad St. ST. LOUIS—3966 Olive St. DENVER—322 Boston Building.
BUFFALO—715 Main St. CHICAGO—167-169 Lake St. MINNEAPOLIS—611 First Ave. S.
NEW YORK—78 Reade St. CLEVELAND—223 Huron St.

AUTOMOBILE
FORGINGS

NEW PLANT. NEW EQUIPMENT.

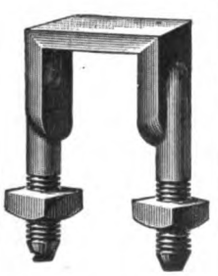
LARGER FACILITIES.

We are prepared to make estimates from drawings or models, and guarantee first-class work and deliveries according to contract.

Special and difficult drop-forgings a specialty.

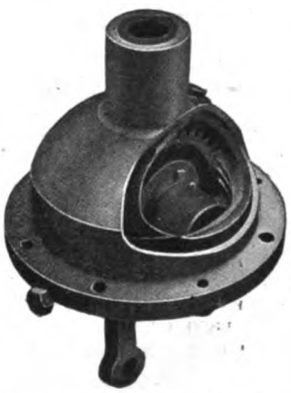


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THE M. SEWARD & SON COMPANY, New Haven, Conn.

BROWN-LIPE GEARS



Irreversible Steering.

Bevel and Chain Drive Differential.

Many Sizes and Models.

Sliding Gear Transmission.

PETERSON & DRAPER, 166 Lake Street, Chicago, Ill. } Direct Factory
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Congratulations

from a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

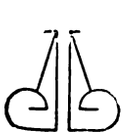
WITH THE BAILEY TREAD.

"We wish to congratulate you because of the splendid way your Goodrich-Bailey tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, the latter seems to be a sure thing on some tires that we know of.

We are looking to 1906 Goodrich and expect to be partial to them, because we believe they deserve it if their previous reputation is any criterion to go by."

—*Asheville Cycle and Auto Co.*, Sept. 23, 1905.

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, sleaing or skidding.



Rims branded in the channel with this copyright mark have been ispected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company

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NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 909 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 420 Superior St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.

G&J

Motor Car Tires

THE MOST SERVICEABLE TIRES MADE

No Internal Heating

The thread fabric construction makes the tire so pliable that it changes position in service with the least possible resistance, which means that the tires are very resilient, fast, and free from internal heating.

No Pinched Tubes

The tire is fitted with a flap, which prevents the tube from coming in contact with the rim, or from getting under the edges of the case, preventing pinched tubes.

No Creeping

The flap forms a strong frictional contact with the edges of the clinches, holding the edges firmly to the rim for its entire circumference, so that it is impossible for the tire to creep.

G&J TIRE CO.

Indianapolis, Ind.

Boston Buffalo Cleveland Detroit
Chicago Chicago San Francisco

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HAYNES

A RECORD OF RECORDS.

We entered the Vanderbilt Cup Elimination Race for only one purpose. We wanted to demonstrate what a HAYNES touring car could—and would do, in competition with racing monsters.

We had been making what some people called extravagant Claims for the HAYNES—and we wanted to prove them.

They are proven.

The HAYNES finished as neat a race as was ever witnessed, and won a place entitling it to representation on the American Team.

The Haynes Car will be the selling car of next season.

This evidence is conclusive evidence to the intending purchaser.

We want a few good agents. Write quick for particulars.

Orders for this car are booked in the order of their receipt.

The Haynes Automobile Co.,

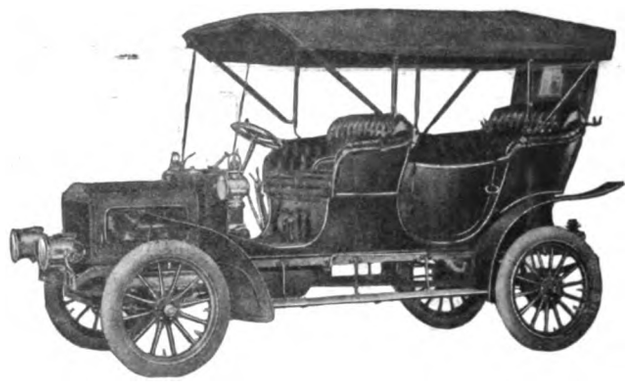
Members A. L. A. M.

Kokomo, Indiana

New York Chicago

The Incomparable WHITE

The Car for Service.



MODEL "F" SIDE-ENTRANCE WHITE

This is the sixth model of the incomparable White steam car to be offered to the public. In our judgment, and in that of the many automobilists who have seen the car, the Model "F" leaves nothing to be desired.

There is something more than the luxurious appearance of the car, its speed and noiselessness of running, to influence your judgment in favor of our car. That "something more" is the uniform and unbroken success of White cars in all reliability and endurance contests, starting in 1901, and an unequaled record of accomplishment by a host of private owners.

WRITE FOR LITERATURE.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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MICHELIN

TIRES OF THE HIGHEST CLASS

Copied, but never equalled.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

6 West 29th Street, New York

Telephone—4657 Madison

E. D. WINANS, General Manager

BRANCHES IN EVERY IMPORTANT CITY IN THE UNITED STATES.

THINK IT OVER

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

Morris & Wilmarth,
Stock, Grain, Cotton and Coffee,
32 Broadway,
New York, July 22nd 1905

Mr. C. E. Miller,
496 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty staff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.

H. S. M. - G.

ALL SIZES CARRIED IN STOCK

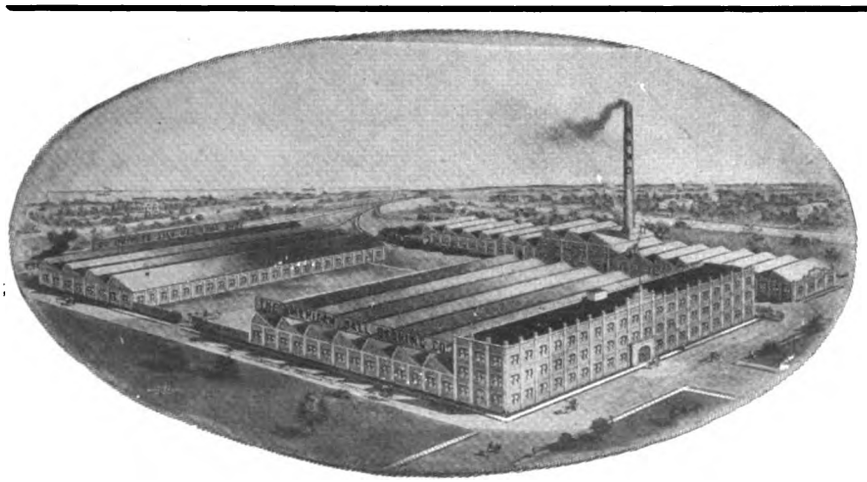
Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request.

CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 38th St., New York. 215 & 230 N. Broad St., Philadelphia, Pa. 202 & 204 Columbus Ave., Boston, Mass. 408 Erie St., Cleveland, Ohio



The output of complete Front and Rear Automobile Axles of this plant exceeds the capacity of all competition combined.

THE American Ball-Bearing Co.

L. S. & M. S. Ry. & Edgewater Park,

CLEVELAND, OHIO, U.S.A.

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Parts for 1906 Automobiles:

For the convenience and assistance of automobile builders we have prepared complete drawings of our 1906 model pressed steel frames and frame members, and other parts, which will be mailed upon application. We are prepared to build pressed steel frames, change gears, front and rear axles and other parts in any quantity for early delivery.

STEEL STAMPINGS:

We make a specialty of steel stampings of all descriptions, including hubs, parts, brake drums, etc.

STEERING WHEELS:

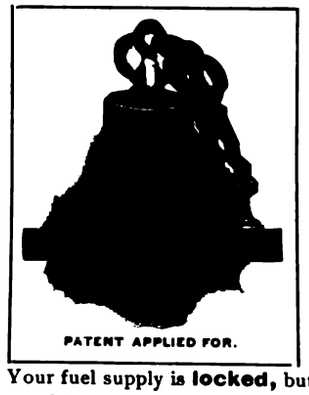
Another specialty of ours—we make the best steering wheel rim on the market, and a large variety of spiders for application to any steering column.

Send for our Steering Wheel circular

A. O. SMITH COMPANY

Milwaukee, Wisconsin.

No More Borrowing Cars Without Owner's Permission



The Hill Lock Valve

(here shown), is a new device and a good one. It is connected at any convenient place in the gasolene pipe and when locked and the key withdrawn prevents the gasolene from flowing to the carburettor and consequently the engine cannot be started. The key cannot be taken from the lock until the gasolene supply is entirely shut off—when shut off keep the key in your pocket. Impossible for anyone to steal your car. Your fuel supply is **locked,** but your car can be pushed to the wash-stand for cleaning, or into the street in case of fire. It is a small device made entirely of brass and turned with a "special key"—no two keys are alike. The lock is of the finest grade, it has five tumblers and cannot be picked or opened without the "right" key. Three keys are furnished with each lock. The locks are perfectly tight, being tested by gasolene under a pressure of one hundred pounds. It is made for all sizes of pipe from the smallest motor-cycle or launch to the most powerful touring car. Price, $5.00. **Special price to Supply Houses and Automobile Manufacturers.** Apply to your supplyman or garage. If not found in stock, address

E HILL, Jr.,

Norwalk Iron Works Co., SOUTH NORWALK, CONN.

Garages and Individual Owners who have had most experience use exclusively

Rome Linseed-Oil Soap

FOR CLEANING CARS.

There are mighty good reasons for it, too. They will readily suggest themselves to any one interested.

We make

Rome Linseed-Oil Soap,

put it up in barrels, half-barrels and pails, and sell it cheaper than ordinary soaps.

Send us a trial order—if not satisfactory you get your money back.

ROME SOAP MFG. CO., Rome, N. Y.

A DOCTOR'S OPINION

MILWAUKEE, WIS.

"I am so well pleased with the tubular steel wheels made by you for my old Winton that I feel under obligation to express to you my satisfaction with them, and I desire further to compliment your machining of the hubs to fit the new steering knuckles furnished by The Winton Manufacturing Company.



"My machine is now thoroughly over-hauled and repainted, and I was so surprised to see how much the general appearance of the car was improved by your artillery wheels that I thought I would throw you a bouquet and let you join with me in a feeling of complete satisfaction."

Very truly yours,

Chas. H. Lemon.

THE MIDGLEY MFG. CO., Columbus, Ohio

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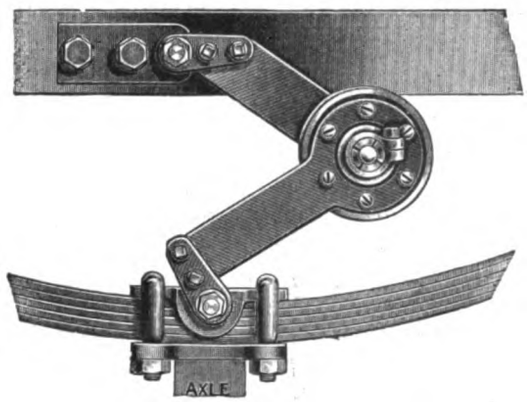
Self-starting from the Seat

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in WILKES-BARRE, PA., will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then . . . . . **MATHESON MOTOR CAR CO. Holyoke, Mass.**

TRUFFAULT-HARTFORD SUSPENSION



RESULTS OF VANDERBILT ELIMINATION CONTEST

On Long Island Course, Sat., Sept 23, Average Time, Almost 57 Miles per Hour,

The cars of these two leaders were equipped with the TRUFFAULT-HARTFORD SUSPENSIONS, which enabled them to win. Only 59 seconds separated them.

1st. DINGLEY, (Pope-Toledo, 60 H.P.) 2 Hours, 50 Seconds.
2d. TRACY, (Locomobile, 90 H.P.) 2 Hours, 1 Minute, 49 Seconds.

The third car ran 19 minutes behind the leader
AND WAS WITHOUT THE TRUFFAULT-HARTFORD SUSPENSIONS

Racing or Touring, if you want to Finish Among the Leaders Equip Your Car with

THE TRUFFAULT-HARTFORD SHOCK ABSORBER.

Hartford Suspensions Were on All the Winning Cars in These Prominent Contests Recently Held.

Glidden Tour; French Eliminating Trials; Gordon Bennett Race; Ardennes Circuit Race, French; 1,000 Mile Track Record, Guy Vaughn.

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President — 69 Vestry Street, New York City

THE AMERICAN TUBE & STAMPING CO.

OPEN HEARTH STEEL BILLETS

Hot and Cold Rolled Hoop, Strip, Sheet and Bar Steel

Copperized and Nickel Plated Oilers, Lamps and Engineers' Sets

General Electric Welding under Thompson Electric Welding Patents

Tubing and Rims for Automobiles

and Cycles. Small Angles. Tees and Channels

SHEET STEEL STAMPINGS

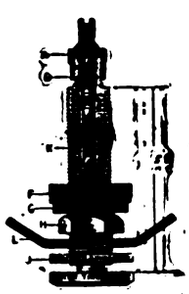
Special Drawn and Rolled Shapes

DIES, TOOLS and AUTOMATIC MACHINERY. PRESSES and DROPS MADE TO ORDER. WELDING AND BRAZING, NICKEL, BRASS and COPPER PLATING, TINNING, GALVANIZING and JAPANNING

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SCHRADER UNIVERSAL VALVE.

Trademark Registered.



SIMPLE AND ABSOLUTELY AIR TIGHT.

MOTOR TIRE VALVES, as shown in cut, are made in four lengths as shown. Cut is exactly half size of the 2 in. valve.

SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS.

MANUFACTURED BY

A. SCHRADER'S SON, Inc., Nos. 30-32 Rose Street, New York.

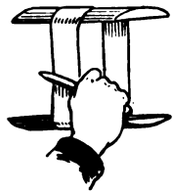
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Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What tire shall I get *next* time?"

For a rim-cut tire is pretty near its finish.

And the chances are ten to one that if you are forced to ride around the block on an ordinary tire with ordinary rims your tire will be rim-cut before you get there. Because ordinary rims are just like a dull jack-knife. Now if you wished to cut a strap with that dull knife, and the strap was held like Fig. 1 you couldn't do it, because your strength would not be great enough. But if you take the strap like Fig. 2, with a little sawing you can cut it.


Fig. 1

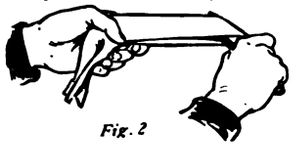

Fig. 2


Fig. 3


Fig. 4

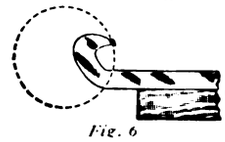
That's exactly the way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim to cut the tire.



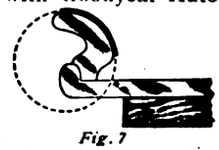
Fig. 5

But just as soon as it gets flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.


Fig. 6

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.


Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims *absolutely flat* for **25 miles** on rough roads without the least injury to the tire. We have the evidence if you would like to see it.

This is only one reason why wise riders are specifying Goodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manusacturers, Dealers and Riders seeking relief from tire troubles.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove Street, AKRON, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St.; and Detroit, 242 Jefferson Ave.

THE STANDARD AMERICAN COOLER.

THE WHITLOCK COOLER

was used on the

LOCOMOBILE RACER that finished THIRD

in the

VANDERBILT CUP RACE.

It was never touched during the race. It did its full duty.

It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Races, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance.

We make coolers of the HIGHEST EFFICIENCY.

The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905, 1906.

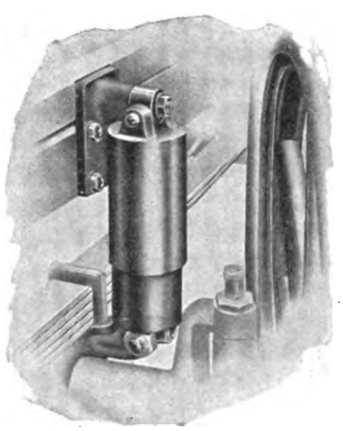
THE WHITLOCK COIL PIPE COMPANY,
HARTFORD, CONN.

RIDE ON AIR!

Kilgore Automobile Air Cushion

"SHOCK ELIMINATOR."

(PATENT ALLOWED)



ON GOOD ROADS—They Allow you to use and enjoy the full elasticity of EASY FLEXIBLE SPRINGS, OBSERVE we say "full elasticity."

ON BAD, LANGEROUS ROADS—They control the too violent spring lay BOTH UP AND DOWN, OBSERVE we say "both up and down."

They Transfer the load and strain from the springs to the axles.

They prevent spring distortion and breakage.

They lessen the wear and tear on tires.

THERE ARE NO ADJUSTMENTS.

This should interest you because:—
It adds to your comfort and safety,
It effects a direct saving in "up-keep."

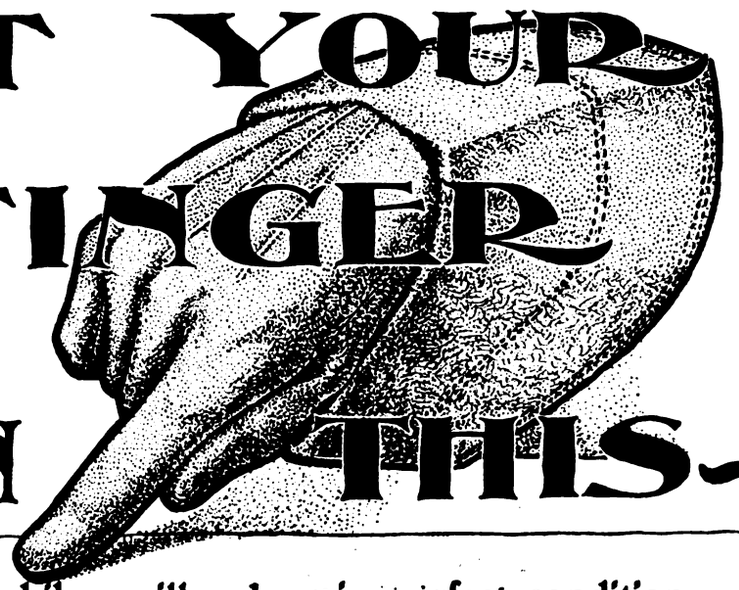
Write for full particulars.

KILGORE AUTOMOBILE AIR CUSHION CO.

49 COLUMBUS AVENUE, Boston, Mass.

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PUT YOUR FINGER ON THIS.



¶ Many automobiles will, when in perfect condition and under control of an expert demonstrator, surmount extreme road conditions with apparent ease.

¶ Experienced users will tell you this is not enough. The practical motor car should have reserve power sufficient to meet all road requirements under adverse motor conditions and in the hands of the ordinary non-professional operator.

¶ The Rambler has this surplus power. It is a matter of paramount importance.

SURREY, TYPE ONE, a five-passenger, medium-weight touring car, ready for the road, with lamps, horn and full equipment of tools, etc; $1200. Cape top or canopy top, with glass front, $100 extra,

SURREY, TYPE TWO, a five-psssenger touring car, of more elaborate design, with double chain drive, full canopy top and glass front, $1650.

THOMAS B. JEFFERY & COMPANY, Kenosha, Wis.

BRANCHES:
CHICAGO, BOSTON,
MILWAUKEE, PHILADELPHIA,
SAN FRANCISCO.

New York Agency,
134 West 38th St.
REPRESENTATIVES IN ALL LEADING CITIES.

Ask for catalogue and a copy of the Rambler Magazine.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, November 2, 1905. No. 6

TO WHOM COMMISSIONS BELONG

Massachusetts Supreme Court Settles a Vexed Question—Dismisses Maker's Appeal.

That much mooted question as to whether an agent in one town is entitled to commissions on sales made by an agent in other territory to residents in the territory of the party of the first part has been again decided, this time by the full bench of the Supreme Court of Massachusetts in the case of Dr. Roy M. Garfield, of Worcester, against the Peerless Motor Car Co.

As the agent of the company, Garfield claimed to have had exclusive sale of its motor cars in Worcester and vicinity, and asserted that he was entitled to the commissions for the two cars sold at the Boston agency of the company to persons who resided within his territory. At the trial he introduced evidence to show that, although the contract did not especially provide for such conditions, he was entitled to the commission by the usage of the trade. To the admission of this evidence and to the refusal of the presiding judge to give certain rulings, the company excepted.

The verdict was for the plaintiff for $840 and interest, the full amount of the commission claimed by Garfield on both sales. It was the contention of the company that the place where the sale was made, and not the residence of the buyer, governed the payment of commissions.

Thomas Plans Paris Excursion.

If the plans of E. R. Thomas, of the E. R. Thomas Motor Co., do not go awry, there will be a considerable delegation of Americans present at the Paris show, which opens December 8.

Mr. Thomas himself had decided to go when the idea of making up a party suggested itself. Accordingly he obtained steamship and hotel rates, and found that the trip on an excursion basis can be made at a wonderfully low rate, not to exceed $225, which includes the best of accommodations. He has suggested to all of the Thomas agents the desirability of visiting the show, and has extended the invitation to join the party to Americans generally. He believes that they have nothing to fear or to lose, and that there may be something to gain by viewing the best and latest that Europe holds. The plans as outlined will bring the party home in ample time for Christmas.

New Foundry in Hartford.

The Capitol Foundry Co., recently organized by Waterburg (Conn.) men, has secured the old plant of the Standard Foundry Co., in Hartford, and is making ready to bid for the trade in automobile castings. The officers of the Capitol Foundry Co. are: President and general manager, F. W. Stickle; vice-president, A. A. Tanner; secretary, William B. Judd; treasurer, Frank S. Wilmot. They are all Waterbury men. Mr. Stickle was lately with the Manufacturers' Foundry Co., of that city.

Export Trade Maintains Strength.

During the month of September, 1905, the value of automobiles exported was $194,499, as against $123,487 for the same month of the previous year, an increase of $71,012. For the nine months ending September, 1905, the total value of exports amounted to $2,235,633, as compared with $1,445,986 for the same period of the preceding year, a gain of $789,647.

Fire Destroys 1500 Automobiles.

One of the biggest fires in the history of the automobile industry occurred at Chicago, Ill., on last Friday, 27th ult., when 1,500 cars were destroyed at the factory at No. 914 West Lake street, but, strange to relate, the pecuniary loss was small—$1,000. The building was occupied by the Acme Toy Automobile Co.

Pope Disposes of Providence Branch.

The Pope Mfg. Co. have discontinued their branch in Providence, R. I., and disposed of its effects. The garage and the accessories were sold to the Shepard Co., agents for the Pierce cars, while the Pope agency was placed with the Rhode Island Motor Car Co.

Body Plant Goes Up in Flames.

Fire on Friday morning last, 27th ult., destroyed the plant of the Central Mfg. Co., makers of automobile bodies, at Connersville, Ind., entailing a loss of $100,000. The insurance is $28,340.

CADILLAC CONSOLIDATION

Formally Perfected, it Entails Slight Change of Name—Capital Increased Fivefold.

What was the Cadillac Automobile Co., of Detroit, capital $300,000, is now the Cadillac Motor Car Co., capital $1,500,000.

The change was made on Friday last, 27th ult., when the new-old company filed its papers with the Michigan authorities.

It marked the formal amalgamation of the Cadillac Automobile Co. and the Leland & Faulconer Mfg. Co., which have been closely allied for a considerable time. The latter concern at all times made the Cadillac engines, and virtually joined interests with the Cadillac Automobile Co. several months since. Following the filing of the certificate Lew W. Bowen, A. E. F. White, Clarence A. Black, William H. Murphy, Henry M. Leland, William E. Metzger and Wilfred C. Leland were elected directors of the new company.

The capital stock of $1,500,000 is divided into 15,000 shares of $100 each, the stockholders named being Clarence A. Black, Lem W. Bowen and Henry M. Leland, 5,000 shares each. Portions of their allotments are held as trustees. The objects of the association stated, are to manufacture, buy and sell cars, carriages, wagons, boats and vehicles of all kinds; to manufacture, buy and sell castings, tools, machinery, motors and engines.

None of the capital stock is paid in in cash. The total net assets of the Cadillac Automobile Co. are given as $1,000,000, of which $200,000 is business and goodwill. Buildings and land at Cass and Amsterdam avenues are valued at $418,118.26; cash, $39,416.81; merchandise (finished product and raw material), $358,733.21; machinery, tools, patterns, models, fixtures, supplies, etc., making up the total.

The Leland & Faulconer Mfg. Co. puts in: Cash, $123,249.34; outstanding accounts, $40,349.87; machinery and foundry equipment, $104,059.34; merchandise and supplies, $93,866.15; business and goodwill, $75,000, with indebtedness, $31,000, making the total net asets $500,000.

The stock has been to a great extent in the

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same hands, and a co-relation has existed among the officers of the two concerns. Those of the Cadillac Automobile Co. were: President C. A. Black; vice-president, A. E. F. White; secretary, Lem W. Bowen; treasurer, William H. Murphy; assistant treasurer, Wilfred C. Leland; general manager, Henry M. Leland and those of the Leland & Faulconer Mfg. Co.: President, Lem W. Bowen; vice-president, A. E. F. White; secretary, William H. Murphy; treasurer, W. C. Leland; general manager: Henry M. Leland.

"The business of both concerns has shown a remarkable growth," said Henry M. Leland. "While the original companies were organized with a capital stock of $300,000 and $175,000, respectively, I can say that every dollar of the present capitalization is represented by something tangible. The Cadillac Automobile Co. did a larger business last year than any other automobile company in the world, its output being 4,000 machines. We do not believe in declaring dividends before they are made or counting our chickens before they are hatched; but we think we are safe in expecting a still larger business next year."

Kansas City to Have Big Plant.

Before January 1 the Kansas City Motor Car Co., which was recently incorporated with a capital of $150,000, and which absorbed the business of the Caps Bros. Mfg. Co., of Kansas City, expects to have its first cars on the market. The Caps brothers have been making cars in a modest way for several years—probably a dozen or so having been turned out—but the new company will, it is declared, build at least one car a day. The product will consist of light gasolene propelled touring cars and delivery wagons. Each car will bear the name "The Kansas City Car," which has been copyrighted.

The company has purchased a thirty acre tract of land on Independence road, in the east bottom district of Kansas City, and the factory buildings are already under way. Two of them are 50x150 feet in dimensions, two stories high, and the blacksmith shop 50x50 feet. All are of brick. The officers are: President, Frank E. Wear; vice-president, J. E. Caps; secretary treasurer, R. Caps; general manager, George K. Wheeler, and superintendent, John C. Caps. Mr. Wear, Mr. Wheeler and J. E. Caps are directors.

De Dietrich Sold Out at Auction.

Short work was made of the effects of the De Dietrich American branch. They were ordered sold by the receiver, and were disposed of under the hammer on Thursday last at the New York garage of the embarrassed concern. Fifteen cars and one motor boat were sold, netting a little more than $38,000. The car which Gabriel drove in the Vanderbilt race last fall, which was valued at $15,000, brought a beggerly $1,950. It was purchased by Walter Allen, of the former firm of Allen, Halle & Co., who has acquired the De Dietrich rights for this country. A so-called "Pullman" car, worth $16,000, was bid in for $3,500, while most of the touring cars brought but one-half of their listed price.

The Week's Incorporations.

New Orleans, La.—The Independent Auto Co., Ltd., under Louisiana laws, with $15,000 capital. Corporators not named.

Detroit, Mich.—The Modern Motor & Machine Co., under Michigan laws, with $15,000 capital. Corporators not named.

Portland, Me.—H. J. Willard Co., under Maine laws, with $100,000 capital; to make automobiles. President and treasurer, H. J. Willard.

Cincinnati, Ohio—The Auto Car Co., under Ohio laws, with $25,000 capital; to conduct a garage. Corporators—Herbert Van Ness and James Ratliffe.

St. Joseph, Mo.—The Wyeth Automobile & Supply Co., under Missouri laws, with $5,000 capital. Corporators—Huston Wyeth and J. Edgar Eberly.

New York City, N. Y.—The Alborak Auto Co., under New York laws, with $3,000 capital. Corporators—J. T. Finn, E. F. Sullivan and G. E. Welsh.

Hornellsville, N. Y.—Archer & Co., under New York laws, with $10,000 capital; to manufacture motors. Corporators—A. M. Archer, L. M. Archer and E. G. Stanley.

Cleveland, Ohio—Paxton Motor Co., under Ohio laws, with $10,000 capital. Corporators—Calvin D. Paxton, Robert Dash, Charles B. Solders, Otto T. Leisy and Alvin D. Paxton.

Indianapolis, Ind.—The Muncie Auto Parts Co., under Indiana laws, with $15,000 capital. Corporators—Hugh L. Warner, Charles T. Quale, C. Roy Hathaway and Harvey L. Hooke.

Cleveland, Ohio—Glenville Garage & Machine Co., under Ohio laws, with $5,000 capital. Corporators—Jay L. Lewis, J. F. Kirtland, C. F. R. Phillips, C. M. Phillips and Oak McCray.

New Brunswick, N. J.—Middlesex Motor Co., under New Jersey laws, with $50,000 capital; to deal in automobiles. Corporators—H. Clark Saunders, Louis A. Voorhees and Charles A. White.

Toledo, Ohio—Commercial Motor Truck Co., under Ohio laws, with $20,000 capital; to manufacture gasolene commercial vehicles. Corporators—Charles S. Keller, John E. Moran, H. W. Hoover, Gus Haas and Otto Kreiger.

Albany, N. Y.—Albany Garage Co., under New York laws, with $50,000 capital; to make, sell and store horseless vehicles. Corporators—E. Palmer Gavit, Matthew Van Alstyne, W. L. L. Peltz, Wm. A. Visscher and Frederick W. Rockwell.

Matheson's New Factory at Wilkes-Barre.

According to present indications, the Matheson Motor Car Co., of Holyoke, Mass., will be installed in its new home in Wilkes-Barre, Pa., long before January 1, as progress in the building of the factory has surpassed expectation. Some parts of the plant will be in operation within six weeks, as the work of construction will permit, the first hundred feet of the main building being completed and the workmen are now putting up the second section.

The plans call for one main building one story high, 600x80 feet, to be constructed of concrete, fireproof throughout. In connection with the main structure there will be a blacksmith shop, the latter being 80 feet in length and 60 feet in width. The boiler house will also be separate from the others, and that will be 30x40 feet. Only a short distance from it the engine house will be located, and it will be the same size as the boiler room. There will be a number of offices, and room will be allowed on either side of the building for any additions that might want to be made. The general location of the building could not be surpassed, as it is situated on a farm, around which there are acres of untouched land, all of which will be utilized for the erection of dwelling houses for the company's employes.

Last week at Wilkes-Barre the directors met and elected all the officers but a treasurer, this vacancy to be filled later. The officers elected were: President, Charles W. Matheson; vice-president, Henry W. Palmer; secretary, F. F. Matheson; directors, Lowell M. Palmer, Henry U. Palmer and Henry M. Brigham, of Brooklyn, N. Y.; Charles W. Matheson, F. F. Matheson and Charles R. Greuter, of Holyoke, Mass; J. Fred Mueller, of Grand Rapids, Mich.; F. M. Kirby, T. L. Newell, W. C. Sheperd and R. Nelson Bennett, of Wilkes-Barre, Pa.

Armory Will Be Ready.

Reports that have been afloat that the 69th Regiment's Armory in New York would not be completed in time to permit of the holding of the A. C. A. or "Independent" show in January, were given their quietus this week. The Motor and Accessory Manufacturers made inquiry on the point and were given the fullest and most convincing assurances that the structure will be finished in ample season.

Orange County's First Car.

The first automobile ever constructed in Orange County, N. Y., is awaiting its finishing touch—namely, a coat of paint—at the Miller cart factory in Goshen. It is a 30 horsepower gasolene car, built as an experiment. If it goes, the cart company will doubtless change its name.

M. & W. Opens in Portland.

Morgan & Wright have established a branch at No. 86 Sixth street, Portland, Ore. It will be conducted in connection with the Ballou & Wright business at that address.

The Auto & Power Appliance Co., of Cleveland, Ohio, has increased its capital from $25,000 to $200,000.

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TWEED HAS A SECRET

It Makes Steam and Gasolene Unnecessary and—But Read the Wondrous Tale Yourself.

Perpetual motion has broken loose again, this time in Minnesota, and, judging from all appearances, the attack is one of the worst on record. Of course, the automobile is the immediate cause of the outbreak, and, though the malady has thus asumed one of the most virulent forms imaginable, but a single victim has succumbed to it up to the present, so far as it known.

The particular manner in which the much desired phenomenon is to be accomplished in this case is by the use of a new combination of metals (blended secretly by the inventor), which acts on steel in such a way as to overcome the effect of the action of gravitation temporarily, and at the will of the master hand. The following enthusiastic description, which is preceded by the statement that the inventor, Thomas Tweed, of Wheatly, Minn., is even now on his way to St. Paul to exhibit there his wonderful contrivance, speaks for itself.

"The motive principle is entirely new and is certainly the greatest thing on record. It looks much like any other autombile except that, standing erect at the back of it are two cylinders of solid steel, nickel plated and weighing five hundred pounds each. They are attached by levers and wheels to the running gear of the machine, and as they alternately move up and down they propel the vehicle at any required speed along the road, without any expenditure of steam or gas or anything else that costs anything for motive power.

"The wonderful principle of the invention is this: that Mr. Tweed has discovered a combination of metals, a secret with him, of course, that possesses the marvellous power of insulating the attraction of gravitation.

"The metal in the discs is alternately placed by automatic machinery first under one of the steel cylinders and then under the other, the one under which it is placed immediately losing all its weight and being raised by the other, which in descending turns the machinery if the automobile. When the descending cylinder has reached its lowest point the insulating disc is moved beneath it and away from below the other, and the weight is instantly changed to the upper cylinder, which in its turn moves the running gear as it comes down. Each cylinder has its separate disc, and the power can be regulated with far greater accuracy than is possible with any other means of propulsion. It can be made to run up a steep hill at the rate of twenty miles an hour, or to creep along a hard, level pavement at a speed not exceeding two miles per hour.

"Mr. Tweed in his first public test of the machine, ran it thirty miles an hour for forty-eight consecutive hours, a distance of 1,440 miles, without a second's stop and at a total cost of only 17 cents, which was for oil. He and a friend took on a load of provisions and lived in the car for the two days."

For a Factory in Mexico.

A syndicate of St. Louis, Mo., capitalists, in which H. L. Hull seems to be the leading spirit, has made application to the Mexican government for a concession to establish a factory for making automobiles and locomotives. The petition states that the company is willing to invest $1,000,000 near the City of Mexico or in one of the States bordering upon the federal district. It also binds itself to commence constructing the buildings within a year after the granting of the concession. The petition asks for the free importation for ten years of all the material used; all models for engines, boilers, iron work, etc. It also asks for exemption from taxation for ten years on all the capital put into the business, with the exception of the stamp tax, which is never remitted.

Blomstrom Adding Two Big Buildings

When the two new additions to the C. H. Blomstrom Motor Co.'s plant, Detroit, Mich., are complete, the capacity of the concern will be trebled. Two brick buildings, one 290x50 feet, and the other 150x50, will be ready for occupancy in a fortnight. Each building is two stories high, and will be used for assembling and finishing purposes. The machine shop will remain in the old building.

Continental Increasing Its Facilities.

The Continental Motor Co., of Muskegon, Mich., has contracted for a new factory building at the corner of Market and Water streets. It will be 120 feet long and 65 feet wide, two stories high, with a wing 30 by 60 feet for the boilers, storage, storeroom and vault for tools and patterns. It will have a concrete foundation, with walls of solid brick. The contract price is $10,000.

Oxford to Move to Fostoria.

By subscribing for $50,000 of the capital of $300,000 of the Detroit-Oxford Automobile Co., now located at Oxford, the Board of Trade has induced the concern to move to Fostoria, Ohio. The company contracts to build and sell two hundred cars at $1,500 each during the first year.

Making Headway in Pittsburg.

The recently incorporated Pittsburg Motor Vehicle Co., of the city from which it takes its name, is erecting a one story frame factory building at Summerlea and Georgia streets. The estimated cost is $6,000.

Ford Opens in Detroit.

The Ford Motor Car Co., of Detroit, has opened a branch in Buffalo, N. Y., at 727 Main street. A. M. Robbins will be manager.

CLIFTON CHOSEN AGAIN

A. L. A. M. Re-elects Him President—All Other Old Officers Also Retained.

The members of the Association of Licensed Automobile Manufacturers think a lot of the men who have served their official interests during the year, and not without reason. They had an opportunity to demonstrate the fact yesterday and they did so in convincing fashion. It was then that the annual meeting of the association occurred at the New York offices. It was a very full meeting and it lost no time in re-electing each and every one of the old officials, as follows:

President—Charles Clifton, George N. Pierce Company, Buffalo, N. Y.

Vice-President—William E. Metzger, Cadillac Motor Car Company, Detroit, Mich.

Secretary—L. H. Kittredge, Peerless Motor Car Company, Cleveland, Ohio.

Treasurer—H. H. Franklin, H. H. Franklin Manufacturing Company, Syracuse, N. Y.

Executive Committee—Chas. Clifton, F. L. Smith, Olds Motor Works; E. H. Cutler, Knox Automobile Company; M. J. Budlong, Electric Vehicle Company, and S. T. Davis, Jr., Locomobile Company of America.

And, as a matter of course,

General Manager—George H. Day.

Allotting the Show Space.

H. W. Chapin, D. J. Post, H. E. Raymond, J. W. Gilson and Peter Steenstrup, who constitute the Allotment Committee of the Motor and Accessory Manufacturers, are in session this week at the Hotel Astor, New York, apportioning the space set aside for them at the several shows. Yesterday they finished with Madison Square Garden and to-day will take up the A. C. A. show at the 69th Regiment Armory. To-morrow will be devoted to the Chicago exhibition. The committee's task is not proving an easy one, as there are about 130 of their members to be provided for, and considerable pruning and squeezing have been found necessary to make room for all of them.

Whitney Buys a Factory Site.

The Whitney Mfg. Co., the well known chain makers, of Hartford, Conn., last week purchased a factory site on Hamilton street, in that city, on which ultimately they will erect a big plant. It is not likely, however, that building operations will commence for a year or so, as the Whitney lease of their present quarters has still a considerable period to run. The new site is adjacent to the plants of the Hartford Rubber Works Co. and the Whitlock Coil Pipe Co.

New One in Chicago.

The Charter Mfg. Co. is the style of the new concern that has taken over the business of the Lubricator Mfg. Co. In addition to the lubricators, it will handle a general line of automobiles and railway supplies.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident-Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintenance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 754-756 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 828 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 428 So. Clinton St.
BUFFALO, 898 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS, 3908 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1530 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1034 So. Main St.

CADILLAC CONFIDENCE

During October we have booked orders from dealers for just 1120 Cadillacs for 1906 delivery—only a starter.

Every one of these dealers has ordered at least as many cars as he had in 1905, in some cases twice the quantity. But not one of them has even seen a sample of the cars he's bought.

Taking Chances?

Not a bit. They know that Cadillacs have always been right, and as the Cadillac Company has never led them astray, they have confidence that they will continue to be right. No freaks, no experiments to be tried on the public—just Cadillacs.

They know that Cadillacs are the kind that give satisfaction, the kind that sell and stay sold and don't worry them to death afterward. They know, too, that most buyers know it and that the others are learning it fast.

We're talking 1906 business.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers.

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NEW YORK, NOVEMBER 2, 1905.

For 7000 Miles of Good Roads.

Don't overlook that ballot for fifty million dollars' worth of good roads—Amendment No. 5, as it will be officially styled.

Only New Yorkers can cast the ballot, but the automobilists of many other States will "root" for it, and right vigorously, too.

The very prospect of seven thousand miles of additional good roads in the Empire State is enough to make the automobilists of every other State open wide their eyes. The bare suggestion of a hard, smooth, macadam highway from New York to Buffalo should be sufficient to bring pleasant dreams to the owners of every vehicle of whatever nature in New York, and their families and friends. The opportunity to obtain it is worth considerable self-sacrifice.

That opportunity will be forthcoming on Tuesday next. Don't neglect it.

Clutch Tendencies.

Clutches have come and gone, most of them on paper to be sure, but some in practise, in spite of which it was not until the advent of the present year bringing with it the multiple disc type that the supremacy of the old leatherfaced cone was at all threatened. One of the most peculiar features of the adoption of the latter form is the fact that despite its much greater cost and complication it has been taken by builders of the highest priced and cheapest cars simultaneously. It was a feature on at least a few of the line of one foreign maker of high repute as early as the fall of 1904, on which it was adopted as a standard part of the equipment a few months later, but of these cars the price of the cheapest ran well into the thousands. At the same time it became a feature of the 1905 line of a domestic builder, whose most ambitious effort does not list at much over the four figure mark. And it has also been adopted by some whose product is at neither one of these extremes—the middle class that constitutes such a very large part of the annual total output.

Not that the multiple disc is the only competitor in the field against the simple cone type. There are others, but with the exception of the growing use of the planetary change speed gear, which does away with a main clutch, and must now be reckoned with as a factor on cars of greater power than ever before, the adoption of these rivals has been in such scattering instances as to make but faint impression on the whole. They have their advantages no doubt, but believers are few, and, as goes without saying, they likewise have their disadvantages, and when weighed in the balance appear to have been found wanting in the majority of instances. To return to the multiple disc type, many reasons will be apparent upon observation as to why it is superior in some respects to other forms and why on the other hand it has drawbacks which make some designers chary of placing faith in it.

In the first place, to take its bad points before its good ones, it is a vastly more complicated piece of mechanicism than the leather faced cone, for example, and further, its initial cost is correspondingly greater. In other words, it costs the maker considerably more to make it a feature of his car than the installation of the cone would. Should it happen to go wrong on the road there are many chances that its repair will prove a hopeless job for the average chauffeur, where the latter would under circumstances no more serious be capable of putting the cone clutch in condition to get home with. Further than that, repairs are apt to cost more, for it is not such a simple matter to dismount and reassemble it. But, coming round to its good points, it is not apt to require the repairs so often. Metal is opposed to metal instead of to leather, and, more than that, the area of the opposing surfaces is far greater and they run in oil. Despite the very lightest form that can be given to the cone clutch, this must be made of rather large diameter, usually that of the interior of the fly-wheel, and its inertia and moment are on this account found to be unduly great. Owing to the number of discs or plates it is possible to employ it becomes practical as well as feasible to make these very small comparatively, with good results. The use of lubricating oil between the plates renders it necessary to squeeze out the film thus formed before they take hold positively, so that it is not as easy, if possible, to engage this form with the same unpleasant suddenness that has usually characterized the use of the simple form at the hands of the inexperienced driver. In short, with the multiple disc type a "fierce" clutch should not be possible, and this means as well that it is not given to sticking to the same extent, for there is nothing to "freeze" it together.

Taken all in all, the advantages of this type appear to appeal to designers favorably, as is indicated by its increasing adoption, some additions to the ranks for 1906 having already announced the fact of their conversion. It would thus seem to be gradually getting a firmer hold by retaining those adherents already acquired and constantly augmenting the number, for, so far as known, none who have once made it a part of the standard equipment of their cars have discarded it, either for a return to older forms or in favor of something new. Despite this, so far as numbers are concerned, the internal cone still reigns supreme, and probably will never disappear altogether.

No Trade Control of Sport!

It is right and proper that the trade should seek to discourage attempts to hold contests held at manifestly unwise and unfavorable seasons of the year, but it is wholly improper that any trade should seek practically to arrogate to itself the control of any sport by virtually adopting a sanction system. It is a dangerous procedure.

Sport and trade cannot be made to com-

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mingle, and in every effort to force such a state of affairs there lurks the germ of unlimited mischief and turmoil which can benefit neither department.

The National Association of Automobile Manufacturers should have a care in attempting anything of the sort. It is the privilege of every one to stay out of a contest if he chooses to do so. To employ a club to force him to do so is—well, it is very unwise, and likely to prove a boomerang.

What Constitutes Finality.

Finality is a word seldom used in its strict significance in speaking of engineering design to whatever applied. Locomotive design followed the same lines for such a number of years consecutively, with no change other than that brought about by increased demands for power necessitating correspondingly larger parts, that the statement of its having reached finality was apparently well founded, and held good for such a period that its disturbance appeared extremely remote. Then experiments with compounding demonstrated the efficiency of the latter, and to a small extent at least the compound has displaced the single acting locomotive.

There are those who stand ready to predict that the motor car, in so far as its basic design is concerned, has approached very close to what may be termed finality. And this is probably as true of the car of to-day as it ever will be of the motor driven vehicle of the future. Given the dimensions and design of the essentials of a score of the cars now turned out by representative builders, there would not be the slightest difficulty in tabulating them and with the result bring forth a composite by equalizing the small differences apparent. And this car that represented the maker of each of the twenty from which it had been evolved could be adopted by any of them as his own as a model for duplication without diverging materially from the design he previously followed.

So much for the small differences extant among the great number of cars now on the market. Has this close approach to uniformity been the result of slavish copying or of a general recognition of the fact, tardy in some cases to be sure, that the specifications embodied in the present day type were those best adapted in every way for the end in view? Observation of the trend of development in the past few years indicates that both were factors of powerful influence in the matter. With the appearance of what is now the accepted standard, some makers immediately discarded the results of several year's study and experiment and copied the new form; others were firm in the belief that they were on the right track and adhered to their original conceptions, even after the widespread adoption of the new form had demonstrated not alone its far greater superiority from an engineering standpoint, but likewise its universal popularity. This, of course, has reference to the gradual displacement of the horizontal engine under the body by the vertical motor under the bonnet for all except light cars. And the same holds true with regard to many details of design not calling for such a sweeping change.

For example, take the case of valve operation; the automatic valve has been dying a lingering death for two or three years past, and is still on the scene, though its representation is so greatly diminished that it may well be said to be at its last gasp. The same applies to the armored wood frame, though possibly not to an equal degree. It in turn has gradually been displaced by steel. Batteries are slowly giving way to mechanical forms of ignition, and the accumulator is taking the place of the dry cells, but here the transition is much more gradual, for various reasons. But probably in none of the instances cited, and they represent but a fraction of those that might be brought forward, will the form that has had to give way before an improvement that has ousted it as standard construction disappear entirely. Nevertheless, the improvements, after having stood the test of several years' use, may properly be said to represent finality of design of the element they represent.

Once an industry has successfully emerged from the chrysalis stage, revolutionizing changes are about as improbable as they were frequent when in the throes of transition. With a generaly recognized starting point of conceded high efficiency, further development must in the very nature of things be gradual. Thus in one sense, the car of to-day may well be said to represent finality of basic design as much as did the locomotive of a quarter of a century ago. But it will mean little, for while the car of 1906 will be practically indistinguishable in the majority of instances from its immediate predecessor, and the same will hold good in the case of those of each succeeding year as far in the future as it is desired to look ahead, the car of a quarter century hence, if compared with that of to-day, may make the latter appear archaic, though each of the steps in the process that brought this about occurred so imperceptibly that it could readily be said of any one of them that it marked finality of design where it was concerned.

Motor Cars for Candidates.

What would the politician of to-day do without the motor car? is a question that is hardly more answerable than the other, What did the politician of yesterday do without it?

To-day, the political aspirant makes his bow to the populace of one borough, says his little say, bows again, and in twenty minutes is making the same bow and saying the same say to the howling accompaniment of the enthusiasts of the next borough, twenty miles or so away. In another half hour he will be fifteen or twenty miles further on, and enthusiasm will still be making men's throats raw and thirsty. Wherever he goes he is followed by a group of reporters, who count the crowd and listen to the band at each stopping place, and then follow on to the next. They also are in motor cars.

In the old days it was all done, but in long delayed fashion, through the medium of that well known institution, the "Hack." Sometimes it took all of two days to do it. Sometimes it took two hacks, a railway train and a horsecar, and then the meeting had to adjourn because the candidate had been delayed in transit. It is all very wonderful, and one of the wonders that is yet not at all wonderful is how the politicians set at defiance the speed laws of their enactment, and with not a cop to say them nay.

The electioneering automobilist is of necessity a scorcher, but woe betide the "cop" who has the hardihood to attempt checking the speed.

According to a tale from the West, a man in Milwaukee had a cook who, when he purchased a motor car manifested so much interest in it that he allowed her to learn to operate it. Now she is a full fledged chauffeuse, goes on long runs, cares for the machine and even does a bit of repairing now and then. When the coachman-chauffeur began to crowd out the machinest-chauffeur there was a deal of wailing from the latter fraternity, but the sequence was inevitable, as the occupation of the former was being supplanted. But when the chook-chauffeuse begins to gather up her apron and prepare to manipulate the tire-iron and the monkey wrench, what will the chauffeurs' union have to say and who will get dinner?

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WHEN BUYERS COME TO BUY

Here's the Line of Talk the "Association" Hands Out—"Just-As-Good" a Leading Card.

If industry, assisted by "just-as-good" argument, counts for aught, it is reasonably certain that the "Automobile Buyers' Association," which recently took up its abode in the Metropolis, will not lack that quality which is supposed to contribute so largely to business success. When the buyer of a second-hand car in search of equipment located the association on the second floor of a downtown building, he found one man in blue jeans, shirt sleeves, under a paint besmeared automobile cap, assiduously applying kalsomine to the walls of the office where the Automobile Buyers' Association has located itself. One desk occupied a railed off portion of the room, and the varnish on the panels was still damp. There was ample room for stock, but none was in sight.

"Yes, this is the 'Auto' Buyers' Association," vouchsafed the individual on the stepladder with the paint brush in one hand, as he critically inspected his visitor. "What can I do for you?"

"Well, I wanted to see the manager concerning the purchase of some supplies," replied the visitor, "but there does not seem to be any one about."

"Yes, yes," hastily interposed the man upon the ladder as he scrambled down and took a seat at the aforementioned desk. "I'm your man. You see, we have just moved in and I am getting the office ready for our large stock.

"Tires? Oh, that's easy—can quote you prices far below anybody else. What size? 30x3½. Any particular make? The X——? Let's see."

Then he hastily figured on an envelope which bore the business card of the association in one corner.

"I can give you a set of four, all complete—inner tubes, lugs and all—for —— each, but why don't you take the Z tire? It is just as good, if not better, and I can give it to you for less money. Why, certainly, they're brand new; no madeover tires in ours. Give you makers' guarantee beside our own guarantee, and if they are not as represented, why—'Money Cheerfully Refunded'—that's our rule.

"But hold on! I-'ve-e got an i-d-e-a— Just the thing! Save you lots of money. Funny I did not think of it sooner! Why not join our association and derive all the benefits?"

Then he launched off into the abstract and began to unfold the plans and objects of the Automobile Buyers' Association—"the pioneers in the field of cooperative purchase of supplies."

"We intend to get out a mammoth catalogue—sorry I haven't one to give you now, but the printers are so slow—that will embrace everything ever made for the auto, and what is more to the point, we'll list every article cheaper than any other house. Now, of course, anyone is privileged to buy from us at catalogue prices, but by enrolling with the association a person is entitled to an additional 5 per cent off catalogue prices. The cost for membership is only $1—a mere matter of form to pay for the extra work of the secretary in keeping accounts. We expect to get 20,000 members, so we will make a little something, although we have to cut margins so close.

"Every member of the association will receive an additional 5 per cent when his purchase amounts to $100. Oh, no! You don't have to buy that amount all at once. We will open a ledger account with each member, and in addition to his 5 per cent off on every purchase, when the purchases amount to $100 he will be credited with $5—take it out in trade or cash—doesn't make any difference to us."

"Better try the Z— tires, though; you'd save $8 on the set. Same thing, same price, same service, same profit to us, and in every way just as good and we can quote you better figures. Isn't that a splendid investment for a dollar, though? Better let me put your name down as 'Member No. 1.'

"Lamps? Certainly; all kinds. Why, we handle everything but the automobile itself. Well, for your car you would want two side lamps. Acetylene; they're the only reliable kind. Have to have a generator, but that does not cost much. The S— and the R— lamps are very good, but they are controlled by the trusts. (Sic!) You see, the manufacturers would not sell me any goods if I cut prices on them. Of course, you would get your membership discount of 10 per cent. Those S— or R— lamps would cost you in the neighborhood of $70 complete, but we are having a lamp made expressly for us—just as good, never blows out, our written guarantee goes with each set. I can give you a pair of side lamps, complete with generator and save you good money. You'd better join.

"How are we able to quote such prices? Oh, we divide our discount with you.

"What do I know about the Blank Storage Company, on —— street? You had better keep away from them. We have to be straight—working under a charter of the State of New York, capital $10,000. See, here is our seal and our stock blanks."

He produced a book of highly lithographed stock certificates, the only noteworthy feature of which was the noticeable lack of any names being inscribed to the shares. He did not condescend to explain why none had been sold. Then he produced a typewritten list of names.

"These are all owners, 20,000 of them. We will send them our catalogue as soon as it is off the press, and expect to have them enroll. We belong to an association that furnishes us the names of all automobile owners in the country—they are genuine—every one of them. That is how we can get the business."

The details of his business—the business of the Automobile Buyers' Association—having been fully explained, he let fall some interesting remarks anent the business methods of the so-called storage company.

"I'll tell you why you should keep away from them. I worked for them several years as salesman. When a man comes in to buy anything the clerk sizes him up pretty accurately. If he looks prosperous and 'easy' he gets 'stuck,' that's all. Suppose, now you came in the store to buy a second-hand lamp and I waited on you. If you looked 'easy' it would be to my advantage to 'do' you. I would trot out a lamp that we usually sell for $5, but if we were beaten down long enough would probably let go for $3.

" 'How much?' you ask.

" 'Twelve dolars,' I reply.

"If you haggled over the price I might let you have it for $10. If I beat you out of $5 the company gives me $1 for my shrewdness. It is just that way all along.

"But we—the Auto Buyers' Association—are doing a legitimate business. The charter you, know. We have to.

"Sorry you won't enroll to-day; it would be to your everlasting advantage. However, any time will do. Come in again," concluded the "Automobile Buyers Association," as he vacated the revolving chair at the desk to resume his work with the paint and brush.

Stage Lines Formed and Forming.

Press dispatches for the week ending November 2 announce the inauguration of the following motor stage lines:

Emery, S. D.—G. A. Tusla, a liveryman, has purchased a motor car for use in his business and will replace his stagecoach with it.

Nyack, N. Y.—Stockholders of the Rockland County Motor Stage Co. voted at a regular meeting to purchase a trial vehicle at once and put it into experimental service over the proposed route without delay.

Cambridge, Ohio—A line of fifteen passenger coaches, to run between Cambridge and Wheeling, W. Va., over the old National Pike. Two coaches will start simultaneously from Fairview, located about midway between the two points, and will proceed in either direction. Through pasengers will be transferred at this point. Two round trips will be made daily.

The following proposed motor stage routes are also recorded:

Versailles, Ind.—L. H. Hotchkiss, of Dayton, Ohio, is urging the installation of a line tween Osgood and Vevay.

Xenia, Ohio—J. S. Harshman, of Springfield, and George and William Smith, of Cedarville, are promoting a line between Xenia and Cedarville.

Urbana, Ohio—John Jenkins, of Urbana, is about to inaugurate a trial line between Urbana and Mechanicsburg. A single machine will be used as a feeler.

Plano, Ill.—M. Fisher, of the Joliet and Aurora Electric Railway, of Joliet, and ex-Mayor John Raymond, of Aurora, are planning a line between Yorkville, Plano and Sandwich. Two fourteen-passenger 'buses will be put on experimentally.

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In the Retail World.

The Reo Automobile Co. has opened a new garage at 283 Halsey street, Newark, N. J.

William Brennan is preparing to build a garage on Church street, Long Branch, N. J.

Frank A. Miller purposes building a garage on Seventh street, near the Southern Pacific Railroad property at Riverside, Cal.

Don P. McClure, of Oskaloosa, Iowa, is enlarging his garage in that city. A complete repair shop, of course, figures in the plans.

Thomas Dolan is preparing to erect a garage at Torresdale, Pa. The building will be of stone, two stories and measure 53x88 feet.

Lane & Parsons, of Hartford, Conn, will establish a machine tool manufacturing and automobile repair shop at Sodus, N. Y. Operations will not begin, however, until next year.

Ground has been broken in Atlantic City for the erection of a garage for Andrew P. Johnston, which, he claims, will be the largest in the State. It will be finished by spring and is to cost $125,000.

Herbert Austin has assumed control of the Acme Automobile Co., at 484 Broad street, Newark, N. J., formerly run by L. J. Wyckoff. Mr. Austin has not yet decided what machines he will carry.

C. R. Deuch, the Erie, Pa., dealer, has moved into his new two story fireproof garage, 82½x82½ feet, at Twelfth and State streets. A new feature is the use of steam pressure for cleaning cars.

A force of men are razing a number of old frame buildings on the property of the Lock Haven Knitting Co., on Cornisa street, Lock Haven, Pa. Calvin R. Armstrong will erect a large garage on the site.

The Auto Car Co., which has just been incorporated at Cincinnati, Ohio, with $25,000 capital, intends to build a garage at Eighth and Sycamore streets, that city. The structure will be of concrete—that is, fireproof.

The Rockford (Ill.) Tack & Nail Co. has decided to discontinue the tack business and devote their energies toward the business of selling and repairing motor cars. The agency for several well known cars has been secured.

The Essex Automobile Co., Newark, N. J., is constructing a new building, 50x60 feet in dimensions, one story high, adjoining their present location in Lombardy street. The building will be one story high, and will have a cement floor.

The Autocar agency in Providence, R. I., which for the last two years has been conducted by Thomas & Lowe, with A. S. Hitchcock as manager, has been taken over by A. S. Hitchcock and G. H. Brown. They will occupy a store at 13 Dorrance street, and will operate as Hitchcock & Brown.

A. E. Morrison, former manager of the Peerless branch in Boston, who recently formed the Morrison-Tyler Motor Co., in that city, has finally located at 121 Masachusetts avenue, opposite Boyleston street. In addition to the Rainier, he will also handle the Maxwell-Briscoe line.

Homan & Schultz are the latest New York dealers to make ready to move northward of Columbus Circle. They have leased a portion of the four story garage which is to be erected at the southwest corner of Broadway and 62d street.

The Auto Supply and Storage Co., of Baltimore, Md., which for the past six months has leased the building at 1,416 Madison avenue, has purchased the property and will make a number of improvements. A two story addition to the rear, 28x60 feet, is among the projections.

A new garage has been opened in Little Washington, Pa., by Swart & Bailey, which will in all probability be operated as a subagency of the Standard Automobile Co., of Pittsburg. An extensive line of cars will be carried, including the Pope-Toledo, Pope-Waverly, Winton, Packard and Olds.

A five story fireproof, brick, stone, concrete and steel garage will be erected by the Albany Garage Co., of Albany, N. Y., on Chapel street. Its dimensions will be 66x72 feet. The salesrooms will occupy the entire first floor, and the remaining stores will be utilized for storerooms, repair shop, offices and waiting rooms. The building will be equipped with electric elevators, turntables, etc. C. Sutherland Ransom will be general manager of the company.

H. Clarke Saunders, the veteran bicycle dealer of New Brunswick, N. J., has incorporated as the Middlesex Motor Co., of which he is the president. Charles A. White is vice-president, and Louis A. Voorhies secretary-treasurer. The company has secured options on a large tract of ground at Carroll place, corner of George and New streets, in the heart of the city, and will shortly build a large one story stone garage. The White steam car will be the leader.

General J. T. Cutting, the head of the new Oldsmobile Co. of New York, is to celebrate the fifth anniversary of the entry of the Oldsmobile into this city by a reunion of Oldsmobile owners. He has engaged the Empire City track for Election Day, November 7, and invited all owners of Olds cars to participate in the reunion. Following luncheon and a drawing for a 1906 Olds runabout, a number of short races and gymkhana events will be run on the track.

Edward Talcott Moore, of Newburg, N. Y., is a born inventor, according to a local newspaper. He began inventing at the early age of ten years, and has continued the practice at intervals up to the present time. Now, at the age of twenty, he is inventing his way through Syracuse University, having just entered the freshman class. After having perfected an electric clock, and an electric massage machine, he turned his attention to automobiles, and has lately received $5,000 royalty on an automatic switch for shifting the ignition current from the battery to the magneto.

Manhattan Storage Catches a Tartar.

For at least once in their rather interesting and more recent career the Manhattan Storage Co., which is the title under which the New York firm of Grinburg & Morris prefer to trade, have paid the price of one of their ways of doing business.

Several months since a man with a used Indian motor bicycle entered their establishment and offered it for sale. The price was low enough to induce them to purchase it without even asking to see the bill of sale. In due course they sold the machine at a considerable advance, of course. Also in due course F. A. Baker, a Brooklyn dealer, sought the purchaser of an Indian motor bicycle which he had sold on the installment plan, only to discover that he had defaulted his payments and skipped the country, after having become embroiled in some trouble and after disposing of the machine to Grinburg & Morris. Several months later the missing Indian was discovered in Long Branch, N. J. The owner of it readily told where he had bought it in good faith.

Baker promptly called on Grinburg & Morris to settle. They indignantly told him that he would have to fight for his money. He immediately accepted the challenge and instituted suit in the Brooklyn civil court. Twice was the trial postponed. It was due to come up again on Tuesday last. But on Monday both Grinburg and Morris, who are said to have retentive memories, thought of the past, and a great white light dawned on them; with the dawning disappeared all desire for "fight" and the publicity which it would entail. They had recourse to their checkbook and wrote out a check for what probably is the most expensive motor bicycle they ever handled. The amount included even the fees of Baker's lawyers.

How Dealers Will be Admitted.

The show committee of the Association of licensed Automobile Manufacturers has indicated the exact procedure that will govern "trade admissions" to the Madison Square Garden Show. As was already known, these admissions will be limited to the morning hours previous to 11 o'clock, but to prevent the abuse of the privilege that has existed in the past, the visiting dealer, on entering the building on the first day will be required to sign the registry book, and also sign his name on the back of his card. To obtain admittance on the remaining days he must prove his identity by again signing his name, which signature must correspond with that on the back of the card.

"Possible," not "Imposible."

In the Morgan & Wright advertisement of last week it was stated that "by a series of exhaustive tests we have proven that it is impossible to so thoroughly amalgamate these parts as to make separation practically impossible; and every Morgan & Wright tire must stand the test before it leaves the factory." The use of the word "impossible" was a clerical error. It should have read "possible," a distinction with a mighty difference.

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Economy Test Shows Effects of Solar Plexus Punch.



When a man or event receives a powerful punch in the solar plexus, if he or it presents a limp appearance there is ample excuse for it.

This is the case with the so-called national economy test promoted by the New York Motor Club, which was inaugurated on Monday last, 30th ult. It is national in name only; and if the blunt truth be told, is of merely passing importance. The club, however, is in no wise responsible for this state of affairs. It undertook the task in good faith, but without regard to season. At this time of the year automobile manufacturers are bending every energy to producing models for the succeeding season. They have thought and time for little else; least of all have they a desire to exploit their old cars.

The New York Motor Club took no cognizance of these conditions, and went ahead with the promotion of its economy test as if all was easy sailing. Then it was that a solar plexus punch was delivered by the National Association of Automobile Manufacturers, which "whereased and resolved" that, as this is no time of the year for contests of any nature, members should hold aloof therefrom. The resolution was not binding, but it was generally respected. It was the punch that doubled up the "economy test" and left it limp and groggy. The club held onto the ropes, however, and tried hard to smile. As the blow did not wholly knock the contest down and out, the promoters tried to put on as brave a face as possible, and, although every move since the blow

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was administered has brought a wince, they are "going through the motions" as originally outlined.

The motions began on Monday, when nine cars set out from the starting point in New York. Of the nine but one is representative of the older and more conspicuous makers. As five classes had been provided for and a gold and silver medal "hung up" for each class, it is evident that honors will be easy.

The starters were as follows:

No. 1—24 H. P. Frayer-Miller, Lee Frayer, driver. Total weight required, 750 pounds. Passengers, Lee Frayer, driver, 155 pounds; E. S. Williams, 179½; H. H. Knepper, 145; R. Atkinson, 149; J. P. Walker, 134. Total live weight, 762½ pounds. Left at 8:38 a. m.

No. 2—20 H. P. Marmon, A. Largensen, driver. Total weight required, 600 pounds. Passengers, A. Largensen, 183 pounds; O. H. Slacer, 137½; Theo. Schulz, 149; C. Levine, 161. Total live weight, 630½ pounds. Left at 9:19 a. m.

No. 3—16 H. P. Reo omnibus, R. L. Lockwood, driver. Total weight required, 1,500 pounds. Passengers, R. L. Lockwood, 129 pounds; C. H. Craft, 149; Duncan Curry, 198; Mrs. Duncan Curry, 138; W. A. Enders, 175; Mrs. W. A. Enders, 172; R. H. Montgomery, 188; Mrs. Leary, 159; John C. Wetmore, 157; Mrs. Hodgdon, 127. Total live weight, 1,692 pounds. Left at 8:50 a. m.

No. 4—8 H. P. Reo runabout, C. C. Singer, driver. Total weight required, 600 pounds. Passengers, C. C. Singer, 134 pounds; J. C. Cochrane, 196; F. O. Edwards, 152; R. M. Owen, 140. Total live weight, 622 pounds. Left at 8:43 a. m.

No. 5—15 H. P. Compound, D. F. Graham, driver. Weight required, 750 pounds. Passengers, D. F. Graham, 217 pounds; A. E. Schwartz, 165; A. Lazzaro, 127; J. L. Alexander, 178; F. X. Brown, 170½. Total live weight, 857½ pounds. Left at 9:01 a. m.

No. 6—15 H. P. Compound, F. C. Carter, driver. Total weight required, 750 pounds. Passengers, F. C. Carter, 144 pounds; R. D. Palmer, 179½; S. F. Gallaher, 174; V. M. Coyne, 164; H. Kelly, 78. Total live weight, 739½ pounds. Ballast, 10½ pounds. Total weight, 750 pounds. Left at 8:44 a. m.

No. 7—15 H. P. Compound, C. P. Hatch, driver. Total weight required, 600 pounds. Passengers, C. P. Hatch, 127½ pounds; George A. Banker, 170; Mrs. C. P. Hatch, 141½; J. W. Hatch, 167½. Total live weight, 606½ pounds. Left at 8:55 a. m.

No. 8—8 H. P. Oldsmobile. Total weight required, 600 pounds. F. Munroe, driver. Passengers, F. Munroe, 149 pounds; W. C. Hancock, 176; W. H. Harrison, 123; T. Gleason, 166. Total live weight, 605 pounds. Left at 8:43 a. m.

No. 9—20 H. P. Wayne, A. L. Kull, driver. Total weight required, 750 pounds. Passengers, A. L. Kull, 210 pounds; E. L. Ferguson, 145½; F. Gremmell, 145; J. G. Moore, 165; A. F. Comancho, 140. Total live weight, 805½ pounds. Left at 9:07 a. m.

There was no crush at the starting point. There was none there whose business did not require it—the few officials, a handful of newspaper men and photographers, with a few disinterested plasterers who were working on the Smith & Malby garage. Had it not been for the placards on the competing cars the few passersby would not have turned an eyelash.

The cars had been filed with gasolene and oil and the tanks sealed the night before and left where they were until between the hours of 8 and 10 o'clock. The first to get away was the Frazer-Miller. It left at 8:38 a. m. Each car carried an observer and its quota of passengers, the former to keep detailed records of all repairs, adjustments and replacements, oil and gasolene used and all expenditures.

Monday's objective point was Philadelphia, and with the exception of No. 5, the 12-15 horsepower compound driven by D. F. Graham, which stripped its gears near New Brunswick, N. J., all the cars arrived at the City of Brotherly Love in good shape. The little Olds runabout lost one of its passengers at New Brunswick. He had arisen to stretch himself, when the car swung around a curve and pitched him out. He was rendered unconscious, but was not seriously hurt. The record of the day was made by the 16 horsepower Reo omnibus driven by R. L. Lockwood. The expenditure for gasolene was $2.18¾, figured at 25 cents per gallon; 25 cents for oil; 93¾ cents for time consumed putting in a chain link and $2.21 for ferry charges, making a total of $5.58½ for ten passengers, or 55 4-5 cents per capita.

As the gasolene tank of the air-cooled Frazer-Miller had not been opened on Monday, its consumption could not be obtained. Its only expenditure was for ferry toll, which amounted to $1.69. Excepting the Frazer-Miller, the Reo runabout had the lowest expense account of any car—$1.07 for fuel and $2,62½ for total expenses. The Oldsmobile spent $1.65⅝ for gasolene and 3⅜ cents for oil. Its total expense was $4.38, averaging $1.09 per passenger.

As none of the minor expenses, such as charges for repairs on machinery and tires, are yet forthcoming, it is difficult to summarize the performance of each car.

Tuesday's run was back to New York. One accident caused the only excitement during the day, and, fortunately, it was not serious. A. L. Kull, in the Wayne, met with four runaway mules near Merchantville, and rather than "buck" against the obstinacy of the oncoming quadrupeds he decided quickly and ditched the car. Only two spokes in one of the rear wheels were broken, and as the committee concluded the accident was unavoidable the Wayne car will be allowed to continue the contest on a new wheel, no charge being made against it.

As several of the passengers liked the fraternal atmosphere of the Quaker City, three of the contesting cars were shy ballast when the start was about to be made for New York. The Reo 'bus took on three high school boys, who were glad to play "hookey" for one day, and the Olds runabout and the Wayne each brought a Philadelphian to Manhattan.

The Compound, driven by C. P. Hatch, blew out a tire near Hightstown and had to replace a shoe at a cost of $28.50. The Marmon was the only other machine to encounter trouble, having 18¾ cents for mechanical and $1.12½ for tire troubles charged against it. As the tanks had not been opened the average expense for the return trip from Philadelphia could not be figured.

However small the operating expense may be the test so far has brought to light the great cost of ferriage. On the trip to and from Philadelphia the cars were required to use the ferry no less than six times, and this will increase the expense to a remarkable degree. For instance, the ferriage of the Reo 'bus for two days amounted to $5.72.

Before even leaving New York on the third day's run to Albany the Frayer-Miller No. 1 came to grief. At Central Bridge it stripped its gears, and finally started for the capital after a delay of thirteen hours. Of the survivors the Marmon car No. 2, which led the contestant from Philadelphia Tuesday, was the first to finish at Albany Wednesday night, having covered the 150 miles in 9 hours [illegible] minutes.

Quite a sensation was sprung in Albany when one of the observers reported to the committee that six passengers in the Reo 'bus left the car at one point and gave it a boost over a hill. The referee added to the cost $2.25 for labor, making its total cost $7.73½ for the day's run to Albany, or 77.3 cents per passenger. Lockwood, the driver, has filed a protest.

Six runs, one each day, constitute the economy test, as follows: New York to Philadelphia, Pa., 90 miles; Philadelphia to New York, 90 miles; New York to Albany, N. Y., 150 miles; Albany to New York, 150 miles; New York to Southampton, L. I., 101 miles; Southampton to New York, 101 miles. Total distance, 682 miles.

The basis of comparative charge as against railway transportation for the entire test shall be as follows: New York to Philadelphia and return, per passenger, $4.00; New York to Albany and return, per passenger, $6.00; New York to Southampton and return, per passenger, $4.53.

The basis of charge will be as follows:

Gasolene, 25 cents per gallon; machine oil, 40 cents per gallon; cylinder oil, 80 cents per gallon; time of engine or general repairs, 75 cents per hour; new parts, catalogue price; chain repairs, 50 cents per hour and catalogue price of new links; all moneys paid for any purpose, such as legal fines, bridge tolls, ferry charges and necessary fees of all description.

Tire charges will be: Time of tire repairs, 50 cents an hour, charges to be assessed in respect to any occupant of the car who assists or any repair man on route; punctures of inner tubes, 75 cents each; blow-outs of inner tubes, 75 cents each; time to inflate inner tubes or replace same, 50 cents per hour.

MONDAY—NEW YORK TO PHILADELPHIA—90 MILES.

No.	Car.	Passengers.	Gas.	Oil.	Total fuel.	Av. fuel, cents.	Total expense.	Av. expense.
1.	Frayer-Miller	5	——	——	——	——	1.68	——
2.	Marmon	4	2.00	.20	2.20	54.0	4.96¾	1.24
3.	Reo	10	2.18¾	.25	2.43¾	24.7	5.58½	.558
4.	Reo	4	1.00	.07½	1.07½	26.9	2.62½	.656
6.	Compound	5	1.50	.85	2.35	45.7	4.42½	.885
7.	Compound	4	1.53	1.07	2.60	65.0	4.74¼	1.178
8.	Oldsmobile	4	1.65⅝	.03⅜	1.69	42.2	4.38	1.092
9.	Wayne	5	2.00	.60	2.60	52.4	4.53½	.905

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ROCKFORD, ITS RACEMEET

Not What Was Originally Planned, but Honors Were Easy and Well Distributed.

About October 1, when the leaves began to turn, the Rockford (Ill.) Automobile Club issued a "defi" to Fate. They were going to break the bonds of superstition and hold a race meet on the 13th of the month, and, furthermore, there were going to be just thirteen events, and in one of the events thirteen cars would start. Well, the meet "came off," but not at the time intended, nor were there thirteen events or thirteen cars in any one of them. The hoodoo could not be broken, "bad cess to it!" On the 13th ult. it rained. Jupiter Pluvius opened the floodgate with a vengeance. Evidently frightened at their temerity in defying superstition, the officials of the Rockford Automobile Club, who had the affair in charge, decided to postpone the meet until Wednesday of last week, the 25th ult. To further guard against a repetition of the weather on the 13th, the number of events was scratched.

It worked like a charm, and although the races were few, with fewer entries, the five or six hundred spectators who had assembled at the Driving Club track seemed to get keen enjoyment from the sport. The fastest time of the day was made by L. Gordon Harrison, in a Stevens-Duryea, who drove a mile exhibition in 1:15 flat. What was expected to be the biggest event of the day proved a fizzle. Harrison's Stevens-Duryea lined up against Shoemaker's Searchmont, and the result can easily be imagined. The inevitable something or other happened to one of the few cars of this latter make in existence, and it went down and out before the three-mile post. Harrison finished the five miles in his own dust in 6:50. The two-mile event, for runabouts, was closely contested, and resulted in a victory for J. E. Miller's Maxwell. In the three-mile event, for fully equipped touring cars, Harry Owens, driving a 22 horsepower Buick, crossed the tape first. Another Buick, with Havens at the wheel, finished second. Time, 5:05. In the three times around race, for air-cooled cars, James Rogers, in a Premier, finished first. Strachan, in a Marion, was second. Time, 4:37½. The summaries:

Two miles, special—J. E. Miller, 8 h. p. Maxwell, first; William McPherson, 9 h. p. Cadillac, second; Carpenter, 8 h. p. Rambler, third; Dwight Cutler, 7 h. p. Oldsmobile, fourth. Time, 4:08½.

Three miles, for touring cars, fully equipped and carrying four passengers—Harry Owens, 22 h. p. Buick, first; Havens, 22 h. p. Buick, second; Bennett, 16 h. p. Rambler, third. Time, 5:05.

Three miles, for air-cooled cars—James Rogers, 16 h. p. Premier, first; Strachan, 16 h. p. Marion, second; Rex Savage, 14 h. p. Franklin, third. Time, 4:37 1-5.

Five miles, for cars over 20 h. p.—L. G. Harrison, 22 h. p. Stevens-Duryea, first; Shoemaker, 30 h. p. Searchmont, broke down. Time, 6:50.

One mile against time—L. G. Harrison, Stevens-Duryea. Time, 1:15.

What Minneapolis Will Teach Them.

The young Men's Christian Association of Minneapolis, Minn., is one of the most recent branches of this organization to take up the study of the motor car in detail. The curriculum provides a series of ten lessons, as follows: Lesson 1, Four cycle gasolene engines—its history; ignition, exhaust, suction and compression; 2, valves, exhaust inlet, automatic and machine worked; 3, spark system, coils, vibrators, commutators, advancement and time of spark; 4, carburetters, needle, pin and flat variety; 5, oiling and cooling systems; 6, bearings and vibrations, including the principle of muffling and smell and "soft coal smoke"; 7, transmissions and clutches; 8, chains and shaft and the steering gear and batteries; 9, rear axle and springs, including general method of attachment and repairing; 10, setting and tightening wheel bearings, and removing and repairing tires.

Tag Test Case Up for Hearing.

The Unwin test case, which is an attack on the validity of all laws imposing a license or registration fee, and which is backed up by the National Association of Automobile Manufacturers, was yesterday given a hearing in the Court of Common Pleas for Hudson County, New Jersey. Counsellor Terry, for the defendant, filed a vigorous brief of some thirty-four typewritten pages, in which he aggressively attacked the legality of the New Jersey law. He handled the whole tag and numbering system without gloves and maintained that it "violates those clauses of the Federal Constitution which prohibit double taxation and which guarantee that every citizen shall have equal protection, and that no citizen shall be deprived of his liberty or property without due process of law."

"Ju tice" in Gov. Folk's State.

Loaded shotguns are now used to punctuate the ethics of the police trap in St. Louis, Mo., the masked battery being considered a necessary adjunct to the usual stopwatch and handkerchief equipment. On Sunday, October 29, no less than four parties of prominent motorists were held up peremptorily and bade to "stand and deliver" in the most modern and approved fashion. One of them was halted and ordered to show his receipt for his license fee. Although he displayed the number, when he failed to produce the receipt he was taken into a barn, "tried" and "relieved" of $19.50.

Why Wicks Favors Cup Races.

At least one man has given ample proof that the Vanderbilt Cup race pays. He is J. Wicks, who owned the farm land on which the grandstand was erected and who let the parking, tenting and other privileges. He this week placed an order for a 30 horsepower Pope-Toledo.

ORMOND, ITS PROGRAMME

Championships f r Everyone and a Large Bid for a Record and Press Notices.

The programme for the Ormond-Daytona Carnival, which will occur during the week of January 22, made its appearance this week. With it came out what was a matter of fairly general knowledge, i. e., that the two Florida towns and several hotels having buried their rivalries and other differences W. J. Morgan would again manage the carnival for the Florida East Coast Automobile Association. In the events scheduled, which are as follows, a bid will be made for two miles a minute, in an event of that distance which requires that the winner shall attain that pace, which will supply good material for press notices if it serves no other purpose:

One-mile middleweight championship (gasolene).

One-mile heavyweight championship (gasolene).

One-mile championship (steam).

One-mile world's championship, free for all. for Dewar Cup.

One-kilometre record trials for each weight and power class.

One-mile record trials for each weight and power class.

Two-miles-a-minute record, free for all. (The winner must equal or exceed 120 miles an hour.)

Five-mile middleweight championship (gasolene).

Five-mile heavyweight championship (gasolene).

Five-mile championship (steam).

Five-mile free-for-all championship.

Ten-mile middleweight championship (all powers).

Ten-mile heavyweight championship (all powers).

Ten-mile free-for-all championship.

Ten-mile handicap—Open to contestants who start in previous events.

Fifteen-mile free-for-all championship.

Fifteen-mile pace handicap for American touring cars fully equipped.

Thirty-mile free-for-all championship for American-built cars.

One-hundred-mile free-for-all championship.

Senator's Drastic Cure for Drunks.

State Senator McKee, of Paterson, N. J., has announced to his constituents that he will introduce at the coming session of the legislature an amendment to the State automobile law. It provides a penalty of three years in prison and a fine of $1,000, without the alternative of either, for any person caught driving an automobile in the State while intoxicated.

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New York Association Adopts Signboard.

At the quarterly meeting of the board of directors of the New York State Automobile Association, held at Rochester, Saturday, 21st ult., it was naturally decided to favor the proposed amendment to the constitution providing for the issuance of bonds by the State for the sum of $50,000,000 for good roads.. A signboard of metal, a blue background with white block letters four inches high, was adopted as the official signboard of the association, and will be placed at intersecting roads throughout the State, and it was voted to have headquarters of the association at the two shows to be held in New York City during the week of January 13 to 20. The admission of three new clubs—the Watertown Automobile Club, the Cataraugus County A. C. and the Richmond County Club—to membership completed the business, when the directors were entertained at luncheon by the Rochester organization.

Dayton not Dead but Disrupted.

Apparently the report that the Dayton (Ohio) Automobile Club had decided to "shut up shop" because of a lack of interest was a little previous. It was simply a factional fight that caused the old officers to resign, but new ones were immediately elected, as follows: President, Bert Wolf; vice-president, J. J. Cooper; secretary-treasurer, W. J. Lukaswitz; directors, John Rock, W. J. Lukaswitz, Louis J. Wehner, Adolph Latin and Joseph L. Schenck. A committee was appointed to secure new club quarters.

Scranton Motorists Get Together.

Preliminary formation of an automobile club took place at Scranton, Pa., last week. These officers and committees were chosen: President, M. B. Fuller; vice-president, Thomas Sprague; secretary, Robert Peck; treasurer, A. P. Bedford; executive committee, Valentine Bliss, G. A. Singer and G. B. Jermyer; committee on roads, A. B. Dunning and G. A. Singer; committee on constitution and bylaws, F. M. Vandling, M. L. Smith and Alfred Harvey.

Vermont Club Elects Officers.

At the annual meeting of the Vermont Automobile Club, the following officers were elected for the ensuing year: President, H. W. Hall, Burlington; first vice-president, J. M. Boutwell, Montpelier; second vice-president, J. B. Manley, Brattleboro; secretary-treasurer, John W. Gordon, Barre. The report of the secretary-treasurer showed the finances of the club to be in a healthy condition and gave the membership as 108.

Sholes is Cleveland's President.

F. T. Sholes was elected president of the Cleveland (Ohio) Automobile Club at the annual election held last week. The other officers chosen were: Vice-President, A. Ward Foote; secretary, George Collister; treasurer, Windsor T. White.

Again Attacking Pennsylvania's Law.

Argument on the validity of the act of April 23, 1903, General Assembly, State of Pennsylvania, governing suits for damages arising from the use of motor vehicles, was heard in the Court of Common Pleas, Philadelphia, last week on a motion to strike off a non-suit in the case of Frank J. Floyd against Albert H. Chandler.

In January last a valuable trotting mare owned by Floyd ran away on Montgomery Pike on account of the alleged carelessness of Chandler, who was driving an automobile and did not stop when requested. The mare fell and was badly injured. Floyd brought suit for $1,200 against Chandler, but Judge Audenried entered a non-suit, ruling that the suit should have been brought in Montgomery County, where the accident occurred, according to the terms of the act of April, 1903. Attorney Robert P. Kelly, in his motion to strike off the non-suit, declared that the act was unconstitutional under previous acts. He argued that the legislature has the right to make an act regulating the use of automobiles as a police regulation, but that when it attempted to determine the jurisdiction in which suits for damages should be tried it went beyond its limits. The court reserved decision.

Ohio Women Make a Discovery.

According to Ohioians the Woman's Club of Canton, is one of the "brainiest" organizations in the country. They have discovered a new proof that the prophets of the Old Testament days were divinely inspired and that they were given a long look into the future. Not only did they foretell the destruction of the city of Jerusalem, the coming of the Christ and other historical events, but the ladies have discovered that the prophet Naham stood in spirit at the threshold of the Twentieth century and saw the automobiles gliding over the asphalt avenues and boulevards, or saw the devil wagon racers touring the country roads and leaving in their wake the maimed and the dead. This fact was demonstrated by passages of the Old Testament quoted and read at a meeting of the club.

Farson Again Named for President.

By placing John Farson at the head of the regular ticket of officers for the Chicago Automobile Club, to be voted on at the annual election next week, the nominating committee sprung a coup on the three rival factions. Instead of three tickets and a warm campaign, the annual election is likely to be the quietest in the history of the club, with little, if any, opposition to any member of the regular ticket. The ticket follows: For president, John Farson; first vice-president, Allen S. Ray; second vice-president, B. H. Marshall; secretary, Sidney S. Gorham; treasurer, T. J. Hyman; directors, Ira M. Cobe, Robert Tarrant, Jr., F. C. Donald, N. H. Van Sicklen, Jerome Ellis and Charles Gregory.

Long Swamp Road is Opened.

When the widening of what is known as the Long Swamp road, near Scranton, Pa., is completed automobilists will have at least one highway in the country where they can open the throttle without fear of being haled into court. The road is the private property of the Scranton Gas & Water Co., and until now automobiles have been prohibited from using it. The work of widening will be completed by November 15, and will be made so that two automobiles can pass with safety at any point. This will complete the system of roads that the Scranton Gas & Water Co., through the efforts of its president, W. W. Scranton, has constructed at great expense around Lake Scranton and in that vicinity.

Warding Off Winter Weather Effects.

Now that the promise of cold weather is growing more assertive, all the motorists' kind friends are offering advice as to the best methods of caring for the machine during the winter months. Generally they advise the use of a calcium chloride solution on the cooling system. They tell how to mix it and how to put it in the tanks, but they never stop to give directions for removing the crystals which are certain to accumulate before the opening of spring. It should be remembered in this connection that glycerine and alcohol, when properly blended in solution, give absolutely no trouble on this score, and, besides, serve to absolute advantage in warding off the effects of the cold.

Levi Spins a Golden Yarn.

Gold mining by automobile has now come into vogue, say the daily paragraphers, and cite the case of J. E. Levi, of somewhere in the East, who claims to have a gold nugget three inches in diameter mined a la motor car. The story told is that Levi stopped in Denver to have his touring car overhauled after a tour through Southern Colorado. While wiping off some of the machinery the gold nugget dropped to the floor. The explanation seems to be that the gold was caught by a wheel, thrown up and lodged securely in the mechanism at the bottom of the car, while travelling the rough country near La Junta.

"See France" by Motor Bus.

A new phase of the commercial motor car proposition has been opened up by the recent announcement of the London Motor Omnibus Co., which has been running 'busses in the great metropolis for several months to good advantage, that on November 18 a special motor coach will leave London, provided a sufficient number of seats have been taken, for a thirty days' tour through France. The route will include a circuit taking in Nice, Monte Carlo and Mentone, returning by a different way, and the fare of 50 guineas will include first class accommodations for passengers and baggage throughout, the tour being personally conducted.

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WHAT PARIS TALKS ABOUT

Last of Season's Contests and Outlook for those of Future—Basis for Touring Trials.

Paris, Oct. 20.—Of the three automobile meetings which terminate the season, the final one at Gaillon on Sunday helped to retrieve the partial failures of the previous contests at Chateau-Thierry and Dourdan. As a popular spectacle the classic Gaillon hill climb was a decided success, for there could certainly have been not less than 10,000 people crowding on each side of the famous hill that is known to every one who travels by road between Paris and Rouen. This gradient has always been a favorite one with makers because, being absolutely straight, it allows the cars giving their maximum effort, and for this reason there was quite a large number of entries for Sunday's contest, mostly, however, consisting of touring cars.

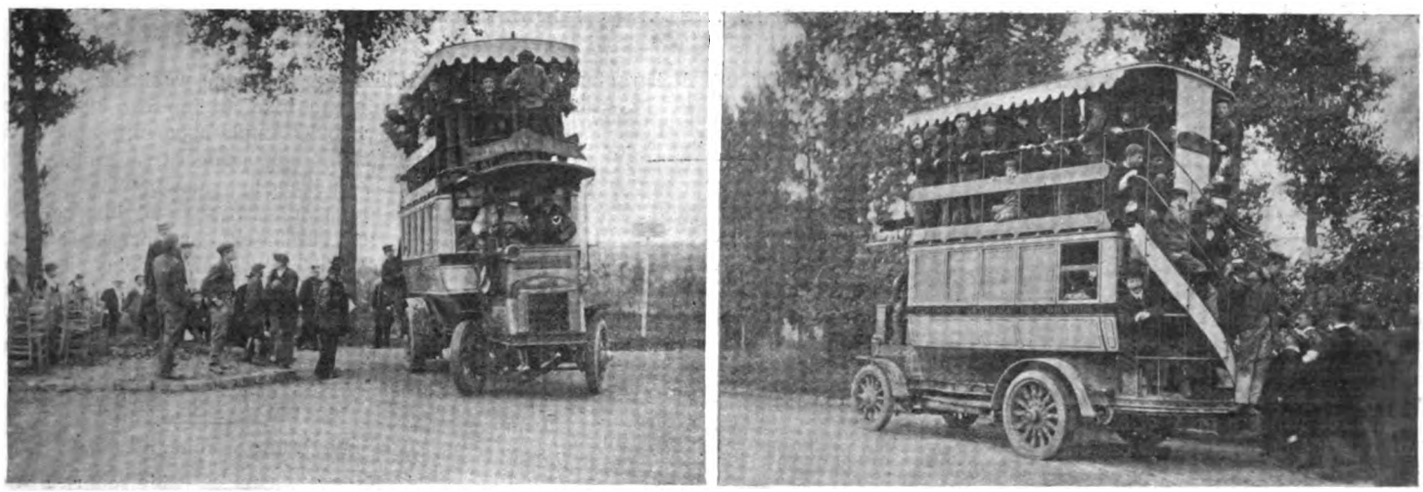
The experience of Gaillon has in fact shown once more that the leading firms are determined to hold aloof from the fall meetings, since there was only one French maker competing in the class of big speed vehicles. On the other hand, the foreign makers were in very strong force, and the Mercedes especially were making desperate efforts to efface the bad impression created by their failures during the past season. They entered no fewer than five cars, including three of the new type of 120 h. p. The only other big competitor was the six cylinder Napier, driven by Clifford Earp, which found its victorious career brought to an end by the victory of Baron de Caters, whose car beat the big Clement-Bayard by a second, with the Napier tying with one of the light cars for third place. A feature of Gaillon was again the excellent showing of industrial vehicles and motor cycles and tricars which seem likely in the future to be a special feature of the fall meeting, in the event, that is, of its being kept on the programme.

If the experience of Sunday goes for anything we may expect to see Gaillon maintained as a classic event, even if it be found necessary to suppress the other meetings at Chateau-Thierry and Dourdan. The prominence being given to touring trials and industrial vehicles at these meetings emphasizes once again the change which has come over the French trade. As the Automobile Club has decided that it will authorize no more racing in this country makers have no inducement to build speed machines, and in the absence of such vehicles it follows that the speed categories in the different tests will undergo a natural extinction. It has however yet to be seen how far the French Automobile Club will be able to carry out its policy of suppressing long distance races. In England the club has officially decided to follow the French lead because apparently it is unable to see what other course is open to it, and more especially no doubt because it finds that the tourist trials in the Isle of Man are a very good substitute for racing, while from a manufacturing point of view the results are likely to be far superior. Germany and Italy are not of the same opinion, for while the latter country has benefited enormously by the success of Italian cars in the races held during the past season, Germany has retrograded on account of its consistent failures, and, therefore, while the one country wishes to continue its successful racing career the other means to do everything in its power to revive racing and thus retrieve its somewhat tarnished reputation.

For this reason the proposal of Germany to convene an international conference to discuss the advisability of holding one big international race a year must be taken seriously. Certainly it is causing a good deal of embarrassment to the French Club. This body has requested the German Club to postpone its proposed conference until after the annual international conference, which is held in Paris during the show in December. Seeing that England is already sufficiently served with its tourist trials I do not think that it will be particularly anxious to back up Germany in the agitation for an international race. Therefore, the only strong support that country is likely to receive will be from Italy, and in a smaller measure, perhaps from Belgium, because the holding of one big race would imply the suppression of the Ardennes contest. On the whole, I do not think that Germany will succeed in its attempt to revive a race on the Bennett lines, and that the status quo will be maintained with the races in the Ardennes and over the Bressia circuit, in which French and other makers will be at liberty to compete if they feel it to their interest to do so.

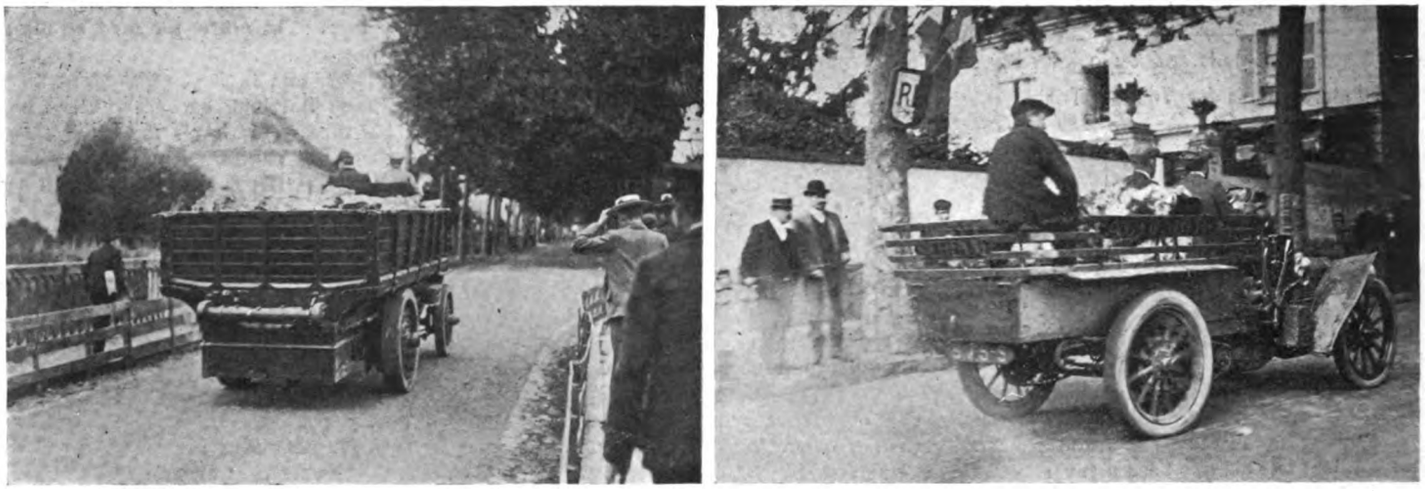
Meanwhile France is entirely occupied with the development of its industry upon a purely practical basis. The two great events for next year are to be the competition of touring cars around Europe and the race for pneumatic tires, both of which offer so many difficulties in organization that it will probably take a considerable time before all the details are satisfactorily worked out. The task of providing a basis for the touring trials is being left to the manufacturers, who are considering various proposals for classifying the vehicles. They have at present three formulae under consideration, one in which the power varies proportionately to the bore of the engine, another in which the power varies according to the cylinder capacity, and the third in which the power varies proportionately to the surface of the piston and the square root of the stroke. So far as the carriage bodies are concerned, it has already been decided to adopt the spider body with hood for the first category, the double phaeton with canopy for the second category, and the limousine for the third category. Each passenger must carry thirty kilos of baggage, which, however, may be made up of tools and accessories if preferred.

Another instance of the effort being made to develop the practical character of automobiling is seen in the number of competitions and demonstrations that are being organized for the forthcoming show. There is to be a competition of motor cabs and other motor vehicles for town use which



ONE OF THE BUSSES THAT COMPETED IN THE FRENCH HILL CLIMBING CONTESTS.

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TYPES OF COMMERCIAL VEHICLES IN THE FRENCH HILL CLIMBING CONTESTS.

will have to cover a course of sixty miles in Paris accompanied by official observers. A big demonstration is also to be made with industrial vehicles, when all the different firms will assemble their 'buses and trucks outside the Grand Palais and then go in procession all over Paris. Seeing that there may be some hundreds of such vehicles it is obvious that such a demonstration must have excellent results in impressing the public with the importance of this new and promising branch of the industry.

Among other competitions is one for self-starters, for which a prize of $2,000 is being offered. This competition is the outcome of the recently formed Academy of Sports. Possibly you may not have heard of this Academy of Sports, and even in Paris there are not many people who know of the existence of this body, although the forty "Immortals" who compose the Academy would probably be greatly aggrieved if they were told that they were not such an important factor in the automobile movement as they believe themselves to be.

It occurred one day to a well known motor journalist to create this body on the lines of the French Academy, with the same number of forty life members and empowered with the same autocratic judgment on everything connected with the sports it is supposed to represent. The promoter of this new academy did not have any difficulty in getting around him thirty-nine spirits having the same magnificent ideas of their own importance as himself, and while some of the appointments are certainly justified it is difficult to see by what claims others can have found a way into this august body except on the assumption that the academy is a sort of friendly mutual admiration society. One of the most distinguished members is M. Henri Deutsch de la Meurthe, the well known gasolene millionaire, who has offered the prize of $2,000 for the best device allowing of the motor being started from the seat. Of this sum one half will be offered for the best device presented at the show in December next, and the remainder for a similar competition in December, 1906. The device must be of a mechanical character, and will be tested on cars with motors of at least 20 horsepower.

As They do it in Japan.

As in everything else the Japanese have adopted Occidental standards in compiling their patent legislation and the Japanese law in addition to providing for the issue of patents also protects patterns against imitation and infringement. The law is similar to the German "Gebrauchsmuster-Schutz Gesetz" which boiled down simply means "design patent law" or literally "usual sample protection law." This extends protection for three years and may be renewed at the expiration of that period; its enforcement is said to have had a very beneficial effect upon the makers of things "made in Germany" who pirate their competitors designs, but unfortunately it does prevent stealing that of outsiders.

According to the Japanese law no article can be protected, a description of which has been published in the Japanese papers, or that has been used in the country before application. The latter must be made through accredited patent agents and the article undergoes a careful examination by the Patent Office. Protection is only extended to new ideas but adaptations or combinations of existing articles are admissible. In fact it must not have an original basis which should be made the subject of a patent proper. Infringers are severely dealt with, not only by fines but also by imprisonment.

Sweden in German Hands.

In Sweden the automobile business is said to be almost entirely in the hands of the Germans, although several local firms have begun the manufacture of low priced machines, and not a few American runabouts are to be seen in use. The Swedish users, having had but little experience with the more expensive types of machine, have come to the conclusion that $600 is about the limiting price for a motor car. Consular reports are authority for the statement, however, that as the members of the wealthier classes are beginning to take an interest in the movement, there is ample opportunity for a good business in high grade cars, provided it be carried on liberally, allowing plenty of latitude for demonstrations and instructions to intending purchasers, and arranged so that there should be little or no delay in the supply of spare parts. Stockholm, Gothemburg and Malmo are said to be the most likely towns, while Norrköping is a rich industrial centre which offers good facilities alike to the maker and dealer.

Here's the Automobile Skate.

According to a recent cable report, a young Swiss engineer is said to have successfully evolved the "automobile skate," or "motor boot." It consists of a pair of stout boots, weight not given, each of which is mounted on a miniature automobile running on four wheels of about a foot in diameter. The two work independently of one another, and should one break, the other is said to be capable of carrying the traveller along without any difficulty. It is claimed for the new invention that an average speed of twelve miles an hour is possible over country roads all day long without undue fatigue on the part of the operator.

Offsetting of Cylinders.

Speaking of the growing practice of offsetting cylinders in motor car construction, a foreign print is authority for the statement that the following ratios have been adopted by the leading Continental makers: Length of piston 1.1 bore; length of connecting rod, 2 stroke; amount of offset, .6 stroke. This enables the designer to use a connecting rod somewhat shorter than is common practice, thereby reducing the height of the motor, without losing anything from the increased angularity of the rod.

The Winton Motor Carriage Co. is preparing to erect a one story frame building, 85x 45 feet, at its plant on Berea Road, Cleveland, Ohio. It will be used as a restaurant for the company's employes.

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FOR THE MOTOR POLICE

New York to Purchase Twenty More Machines and not Solely to Chase Scorchers.

In his budget for the coming year, Police Commissioner McAdoo, of New York, has included a sum to be expended in the purchase of twenty motor bicycles for the use of a detail of the men of his force. This comes as a result of a considerable experiment which he has already carried out in the department, and from which he has come to the conclusion that certain of the work of the police can only be accomplished by means of a motorcycle squad.

Primarily, the work of the motor police is in checking overspeeding on the part of reckless and incompetent automobilists, and for this work the equipment is absolutely essential. Also, for the more general work of the traffic squad in the boulevard and suburban districts the motor bicycle patrol is placed at a great advantage over the ordinary cavalry police. That there is also a growing need of a motor police for the pursuit and arrest of those of the criminal classes who are availing themselves of the motor car as a means of carrying out their evil designs is perhaps a new idea, but one which is nevertheless perfectly patent. Says one of the great dailies in discussing the subject:

"There is much startling evidence to prove that an entirely new class of criminals, quick to appreciate the possibilities of the automobile, is making of them a very dangerous weapon. Already autos have been held up by up-to-date highwaymen skilled in the use of the machines who are capable of carrying off their booty. To the burglar, again, the automobile offers a most effective means of escape. A thief running through the streets at once attracts a crowd; the same man comfortably seated in an automobile, may escape at much greater speed, safe from suspicion or pursuit in the most crowded streets. As the mechanism and control of automobiles becomes more familiar the number of thefts of these machines is certain to increase. Any criminal who can control such speed as the automoble affords suddenly gains a dangerous advantage in carrying ing out a great variety of crime.

"The considerations of the advantage that the control of this dangerous weapon lends to criminals have led many thoughtful people both automobilists and others, to favor an increase of the automobile police squad. The means of rapid locomotion obviously should be in the hands of the police as well as of the citizens, whether they be honest or dishonest. The fact that there are some twenty-three thousand automobiles in New York State alone at the present time renders such considerations of the greatest importance."

Certainly the methods of the detection of crime and the arrest and conviction of the offenders should keep pace with the nature and method of the offence, and, granted the use of the motor car to those whose intentions are illegal, then the police should as well be provided with an equaly advantageous means of following up the evildoers and bringing them to the bar of justice. Up to the present time the only apparent use and need of a "motor police" has been in the checking of the unlawful speeeding of automobiles. For this purpose there is doubtless a considerable need of men who are equipped suitably, but the matter of excessive and unlawful speeding seems to be one which will take care of itself in the course of time, and, with the education of the motorists to a realization of what constitutes careful driving, and with the education of the lawmakers to an understanding of the statutory needs in this respect.

In the matter of street patrolling and the overtaking of escaping criminals who are thoroughly up to date in every respect, there is and ever wil be an imperative need of a good and efficient patrol, which is equipped in such a manner as to enable it to cope with any emergency which may arise, and to cope with it forcibly and effectually.

Tudor Farm as a Rendezvous.

To meet the needs of automobilists of Providence, R. I., and Boston, Mass., who desire an objective point on their runs through that section of New England, the Tudor Farm Motor Car Club has been formed, with 150 charter members. The clubhouse, which is ideally located on the shores of Lake Walourslopoag, in West Sharon, two miles from Sharon, is the first of its kind to be established in Southeastern Massachusetts. It is situated midway between Boston and Providence, on the straight road between those cities. Ninety acres of land surround the clubhouse. Dorsey L. Greene, of Boston, has been elected president; Amos H. Whipple, of Boston, vice-president, and Emil Camus, of the same city, treasurer.

New York Central's Automobile Cars.

The New York Central Railroad is building two cars expressly to transport automobiles, and to be attached to passenger trains only. Considerable demand has arisen for such equipment when persons going to and from country places wish to take their automobiles on the same train with them. The cars for automobiles will be of the general design of the road's baggage cars, except that a round top roof will be used and a door seven feet wide and eight feet high will be placed at one end of the car.

How It Helped the Hunters.

Instead of waiting for a train which usually arrives at a time the shooters do not want it, members of the Kubler Gun Club, of Mount Eden, Cal., have decided to use the automobile hereafter on hunting expeditions. The experiment was tried last week with a steam car, and whether the car caused luck is not said, but the seven hunters returned at night with 350 ducks.

MOTORPHOBES IN SESSION

The New Jersey Brand Hears a Truckling Motorist Favor Higher Fees and Large Numbers.

Another step was taken last Friday night in the movement inaugurated by the Anti-Automobile Association, at North Branch, N. J., for the purpose of curbing automobilists, reckless or otherwise. When Colonel Joseph S. Frelinghusen, of Raritan, who owns an automobile, was nominated by the Republicans for State Senator, and Senator Samuel S. Childs, of Bernardsville, was renominated by the Democrats; there came the rub, as the association had previously determined not to support any candidate who owned an automobile. However, the members determined to hear just where each candidate stood on the automobile question and invited them to address the association. Senator Childs will be given his opportunity at a later meeting, but last Friday night Ruppel's Hall, the headquarters of the motorphobes, was filled to hear Colonel Frelinghuysen.

He declared he owned an automobile, but favored any reasonable means to prevent careless automobilists from reckless speeding. He said he believed it would be a good plan to have automobilists when they take out a license to pay a much higher fee than at present; that the number should be on the back, higher up and in larger figures, as well as on the front of the machne.

Irving Hoagland, of Franklin Park, the Republican candidate for member of Assembly, also spoke. He said he thought that before a new automobile law was made the present one should be enforced. He believed it would be a good plan to place officers at certain limits, let them have signals and take out their watches and time the automobilists. If the drivers exceeded the rate of speed permitted by law, let the signal officers have the power to arrest them without a warrant.

Would Have Banners, Not Tags.

Out of the Middle West, Indiana, the State that is noted for its authors and poets as well as other products of the soil to be particular, comes the suggestion that the usual number-bearing placard should be done away with, and in its place a "banner with strange device" substituted. To quote the sponsor of the scheme, who is hopeful that the next sitting of the assemblage of State Solons may consider his system favorably and enact a law accordingly, "a red flag or banner, square, diamond, round or triangular for each automobile—to stand up three or four feet above top—different automobiles to have different colors or combinations of colors and different shapes." The reason given is that such adornments could be seen much further than the numbers, "which are hung so low on the machine as to be wellnigh out of sight."

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THE INDUSTRIOUS CHAUFFEUR

The Shattering of His Dream that Came in Sudden and Saddening Fashion.

By the explosion in Chicago one day last week of an apparatus designed to revolutionize the running of automobiles, Henry Brown's hopes, his body, his apparatus and a valuable touring car were rudely shattered. Incidentally, another man was kiled.

Long ago, twenty-four months, in fact, Brown entered the service of J. Finlay Barrell, a Chicago stock broker, to act as his chauffeur. When Henry was a little chap in knee breeches attending school he always had a knack for inventing things, and his doting teacher prophesied for him a brilliant career. Naturally such a plebeian occupation as a mere driver of an automobile did not satisfy Henry's lofty ambitions. He would yet be a great man, and some day, perhaps, posterity might gaze upon Henry Brown's picture in the Hall of Fame. Such is the ambition of every inventor.

Henry's invention was one designed to reduce the cost of motive power for self-propelled vehicles to the minimum, and by the use of acetylene gas in a little machine, of which he alone knew the secret, speed could be increased 100 per cent. As Mr. Barrell did not keep Henry busy as a chauffeur he had lots of time to apply to the perfection of his invention. His plan promised much; it was just the thing. Thus said a few fellow drivers to whom he unbosomed himself.

In the arrival of a special car and the plans for a final test Brown saw emancipation from his "dog's life," as he expresesd it, and several friends visited him in the morning and congratulated him upon his success, for had not "Henry Brown, inventor," said it could not possibly fail?

Brown's employer had not, however, been so sanguine of his employe's success; in fact, he considered the contraption dangerous, and had forbidden experiments in the garage, but, as all the world knows, a mere rebuke or the like will not deter or dissuade an inventor from his purpose. Somehow or other the cruel world never seems to take the majority of revolutionists seriously. It is the latter's misfortune, perhaps.

The momentuous day had at last arrived when Henry Brown would prove to the doubting Thomas—otherwise his employer—that he had a "good thing" and would not hereafter be dependent upon J. Finlay Barrell for a living. Brown had set the machine up with the aid of an aged negro named Powell, and was just screwing the last nut on when a loud explosion shook the building. When the smoke had cleared away Powell was found outside the garage with one leg completely severed from his body, and Brown lay still by the debris, clutching in his hand a wrench with which he had turned the last screw which marked the completion of his work. His left eye had been blown out, his right leg was broken and his side was lacerated and bleeding where a piece of splintered steel from the cylinder had entered his side. Barrell's car was blow to atoms. Powell, the negro helper, died a few minutes later.

In view of this, it is not likely that the wonderful invention will be placed on the market except through the columns of some joke purveyor.

Motor Cars in Greece.

United States Consul Horton, of Athens, Greece, has the following to say concerning the demand for self-propelled vehicles in that part of the world: "There are twelve automobiles in this consular district, or, to speak more definitely, in the city of Athens. Three of these belong to the King and the princes. His Majesty's automobile is quite a luxurious affair, and is said to have cost some 20,000 francs ($3,860). That owned by Prince Andreas was presented to him by the Czar of Russia. Most of the automobiles in use here were bought in France at a cost of from 4,000 to 10,000 francs ($772 to $1,930). Three new ones are now on their way to this country.

"Automobiles are classed by the tariff law as four-wheeled carriages, which, upholstered or not, used or unused, pay a duty of 300 francs ($57.90) each, besides octroi, etc. In the case of a high-priced carriage, with sumptuous furnishings, duty is assessed on value declared in invoice and bill of lading, and importers are advised to obtain an invoice from the Greek Consul in the country from which the shipment is made. In this latter case the duties are 20 per cent of the assessed value, $25 octroi, and 5 per cent on the 20 per cent. Parts or accessories to autos pay according to their assessed value. Automobiles are classed as carriages for the reason that machinery is admitted into Greece free of duty."

Akin to "Rocking the Boat."

Always it is wise to take the advice of the looker-on with the proverbial grain of salt, as witness the recent incident at a London garage in which a friend of a chauffeur insisted in pouring gasolene over the mechanism of a car which he was cleaning with kerosene "because it was quicker." The chauffeur was working in a pit under the machine at the time, and before he could get out of his trying position the whole outfit was a mass of flames, and the man was so badly burned as a result that he died within a short time. At the inquest the friendly chauffeur, whose name was Smeltz, said that he had not thought of the possible danger. That, however, did not in the least affect the result.

Greasing the Steering Gear.

Although it is not readily accessible in most cars, and although it requires but little attention, the driver should not neglect to force a syringe full of grease into the steering box once in "about so often"; it insures the proper and sufficient lubrication of that most important organ.

IN FAVOR OF MOTOR BUSSES

London's Traffic Commission Sees Good in Them but has to Resort to an "If."

In the report of the advisory board of engineers to the London Traffic Commission, which has just been made public, several interesting points are brought out. The action of the committee in not more favorably reporting on the motor 'bus question, which is agitating Great Britain at the present time, has been widely censured, but it appears that, although the report of the commission did not bring it out clearly, the engineers were favorably impressed with the performance of the mechanically propelled 'bus in contradistinction to that drawn by horses.

In fact, they even went so far as to point out that in practice the speed attainable by the motor 'bus exceeded that of the older types and approximated that of the tram lines. The following figures were quoted in proof of the assertion:

Speed in miles per hr.	Rush hours.	Slack hours.
Horse omnibus.....	3½—6	5¼— 8
Electric tramway....	5½—7	8½—11½
Motor omnibus.....	6½—8¼	8⅛—11½

The committee also framed the conservative opinion that should it be found that vehicles of this sort could be worked and maintained at the speeds quoted, it thought that they would come to have an important bearing upon the transport of passengers in London, and might effect the consideration of railway and tramway policy.

In regard to the real work of the commission in seeking some means of relieving traffic congestion, some very pertinent suggestions were brought out, particularly with regard to the municipal policy which chooses wide junctions and "circuses" for the erection of various obstacles to traffic such as the entrances to underground lavatories, statues and lampposts of unnecessary size. Also the policy of splitting up the highway into two narrow lanes by the erection of trolley posts and lamp poles, as well as cab ranks was heavily scored.

There is meat for reflection in the two points here brought out, and room for its application here as well as in the English metropolis. The motor 'bus must, sooner or later, make its appearance here as a successful institution, but the streets must be cleared of traffic in order to make room for it.

Improving the Hammer Handle.

Cut a three-quarter-inch piece out of the handle two inches from the hammer head. Slot each end of the cut to receive a piece of spring steel three-thirty-seconds-inch thick and as wide as the handle. Fasten the steel with rivets. The extra work requires but a few minutes longer and well pays for the trouble.

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"INSIDES" OF THE MAGNETO

Not the Puzzle that Many Persons Fancy it to be—Just How it Operates.

Reams of paper and barrels of ink have been expended on explanations of the workings of the magneto, and the end is not yet in sight. Despite it all, the first question of the novice is, How does it work? and What are you going to do with it if it breaks down on the road? It is not too much to say that to the majority of motorists, many of them otherwise well versed in the principles of high tension ignition, the magneto is a deep and unfathomable mystery, and doubtless will remain so in the case of those who are willing to let it go at that.

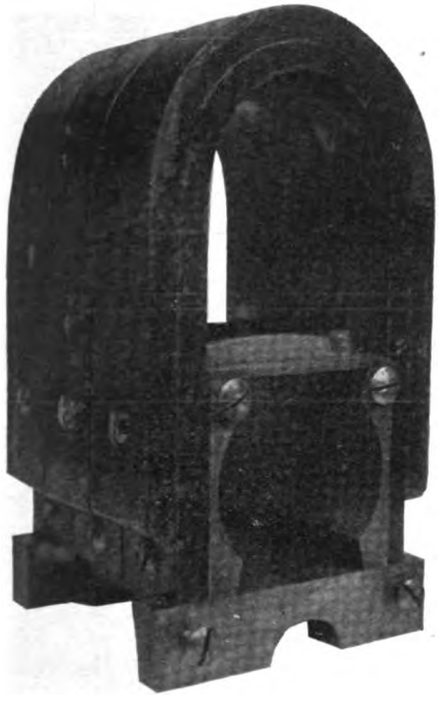


Fig. 1.

The subject is of particular interest at the present time owing to the increasing adoption of the magneto; such, for instance, as the installation of the Eiseman high tension system as a standard feature of all 1906 Packard cars; and those who are anxious to know what sort of mysterious "innards" are concealed by the compact looking arrangement alongside the engine that seldom comes in for much attention, so long as it continues to operate as it should, will be surprised to learn how simple it is in reality. Doubtless the man who confesses to such a depth of ignorance on this point is equally dark as to what happened when he turned the crank on one of the old style telephones. Concealed within the box was nothing more or less than a small magneto of identically the same construction as those employed for ignition purposes. The crank turned a large gear, which meshed with a much smaller pinion on the armature shaft of the magneto, and the current generated by the rapid turning of the latter rang the bell at the other end of the line.

Owing to no attempt being made to centre the entire ignition system at one point by placing both primary and secondary windings on the armature, the Eisemann is considerably less complicated than other high tension systems which incorporate synchronous generation and distribution. As its groundwork it embodies a replica of the small telephone magneto just referred to, but in a somewhat larger and more powerful size. This is, in short, the simplest type of electrical generator ever invented, and its design dates back to the very dawn of the discovery of the generation of electricity by mechanical means. It consists of the permanent magnetic field composed of three compound magnets which are but enlarged copies of the horseshoe magnets familiar to schoolboys. These are made of a special quality of Tungsten steel, which possesses the peculiar property of retaining magnetism to a greater degree and for a much longer time than almost any other steel known. Heat and vibration both affect the retention of this peculiar force in the steel, and unless the latter be of the proper quality the strength of the field will diminish perceptibly, often within a few months. This was one of the great drawbacks present in the low priced magnetos turned out in this country a few years ago for automobile use. They started off first rate, but in some mysterious manner—that is, to the uninitiated user—they seemed to "die," and sooner or later became utterly useless. They were accordingly discarded in disgust in favor of a return to the battery, whereas the only thing needed was remagnetization of the field; but owing to the material used the process would have to be repeated once or twice a year to insure constant operation.

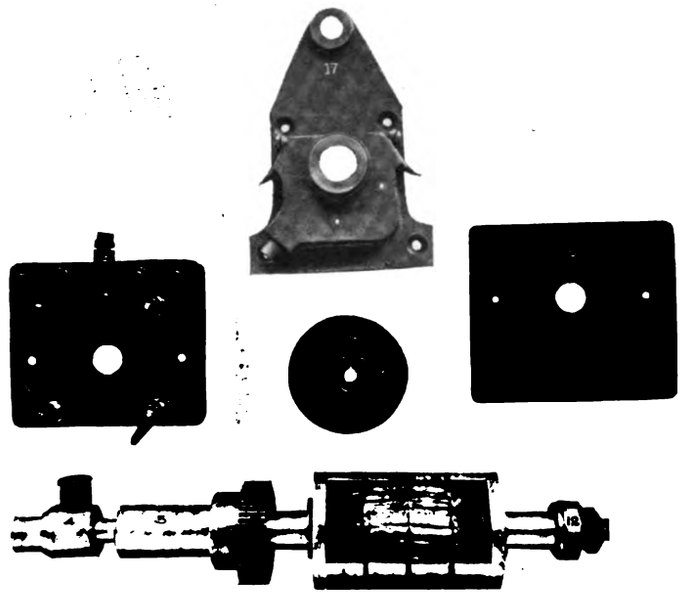


Fig. 2.

Experience with this type of machine, which was placed on the market at a price far below that at which a magneto suitable for ignition purposes can be turned out, made builders sceptical as to the value of the magneto. It is not too much to say that the power of the Eisemann machine took American designers by surprise upon its advent in this country in 1902, and the majority were frank to express their disbelief in its lasting qualities. The magnets were "supercharged for exhibition purposes," according to many, while some were of the opinion that the generator of its size that would produce such a current at such slow speed had never been built, and that it was in some unseen manner connected up with the electric light mains, à la Keeley motor.

The next essential of the machine is the armature, which is shown complete at Fig. 2. This consists of a single winding of coarse wire on a soft iron core of the Siemens H or shuttle type, the first of its kind invented.

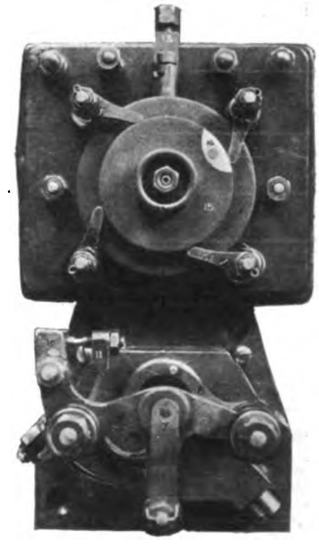


Fig. 3.

As illustrated, this also includes the pinion 3 for driving the secondary distributor 15, as well as the device for advancing and retarding the time for ignition, consisting of a key or block travelling in a spiral on the inside of the sleeve, 5, from which the drive is taken either by gearing direct or through sprocket and chain from the cam shaft. The forked end, 4, of this arrangement takes the end of a rod leading to the ignition lever on the steering wheel. Moving this causes the key to shift back and forth in its spiral path, thus rotating the sleeve and giving the armature a fraction of a turn ahead or backward, thereby changing its position with regard to the time of occurrence of the spark. The current generated by the armature is collected at the point, 6, which is a copper disc terminating an insulated wire that is led out it through the hollow shaft. A small cylindrical carbon brush, about half an inch long and the diameter of a lead pencil, slides in the yoke, 9, Figs. 3 and 4, which is insulated from the rest of the frame and is held in place by the spring, 7. The left side of the yoke, 9, is continued upward and carries an extension,

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10, provided with a screw and heavy platinum point; against this bears a similar point carried on a rocker arm, 12, also shown separately, pivoted at its centre and actuated by the cam, 11, Fig. 5, shown also on the end of the armature shaft in Fig. 3. The rocker has

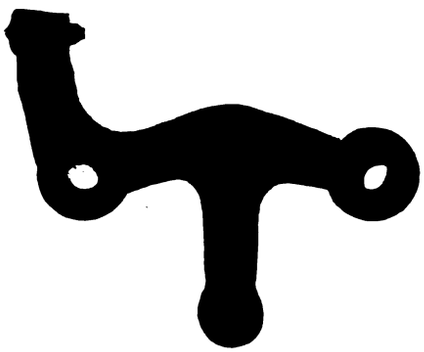


Fig. 4.



Fig. 5.



Fig. 6.

a roller on its lower end, which is struck by the cam as it turns. In order to insure a good connection the small piece, 8, Fig. 6, carrying two platinum points, presses against the inner face of the cam. Thus the armature is said to be "short circuited," or closed, except when the cam depresses the rocker end, separates the platinum points and permits the current to flow through the primary winding of the induction coil.

This occurs at what is known as the point of "maximum inductive effect," that is, when the current induced in the armature winding by passing it before the strong magnetic poles of the field is greatest. This happens twice in each revolution, or as the metal faces of the armature as shown in Fig. 2, enter and leave the embrace of the recessed pole pieces shown in Fig. 1, which is termed "cutting the lines of force of the magnetic field." Accordingly, the cam opens the circuit twice per revolution. This is done in order to obtain a self-inductive effect, which is the surging flow of current occasioned by suddenly breaking a highly magnetic circuit; the same thing that is guarded against at the trembler of a vibrator coil by the use of a condenser, as it tends to reduce the speed of the latter as well as to burn the platinum points.

The current generated is alternating, and accordingly the single coil used is of the non-trembler type, and may be placed in any conveniently-out-of-the-way location on the car, as it is not necessary to get at it. One terminal of the secondary winding of the coil is grounded on the engine frame, as is customary in all high tension systems, and the other is led to the distributor, which in the Eisemann is located directly above the contact breaker, Fig. 3. This wire is carried to the binding post, 13, which is a hollow brass cylinder containing a cylindrical carbon brush pressed against a metal ring on the disc of the distributor, 15. The latter is keyed to the secondary shaft of the magneto, and is made of solid vulcanite, with the exception of a brass sector, 16, which opens a path to the plug of each cylinder in the proper order as it passes under the four steel fingers shown bearing on it, in Fig. 3. The latter connect with the four binding posts shown in a line acros the top of the insulating panel which carries this part of the mechanism, and from which the wiring is taken direct to the plugs.

The simplicity of the wiring is one of the chief advantages of the system, and while, as described, it may be difficult for the novice to follow, this will be easy in the appended outline sketch of the connections. (See Fig. 7.) For the sake of clearness, the grounded terminal of the secondary winding of the coil, S, is shown leading to each cylinder, though in practice this is grounded at but one place on the frame or engine. The drawing shows the system reduced to its lowest terms, in order to make it easily comprehended. The armature and its connections, as already explained, are represented by A, while the circuit breaker mechanism and connection with the primary, P, of the induction coil is shown by the cam, C. In practice there is but one wire leading to the primary of the coil, the return being effected through the grounding of the armature winding on the machine and the bolting of the latter to the engine. It will be seen that the setting of the cam on the armature shaft is made with relation to the position of the brass sector on the secondary distributor disc above it, so that just as the latter is passing under one of the fingers communicating with a plug of the cylinder, the cam is opening the circuit and

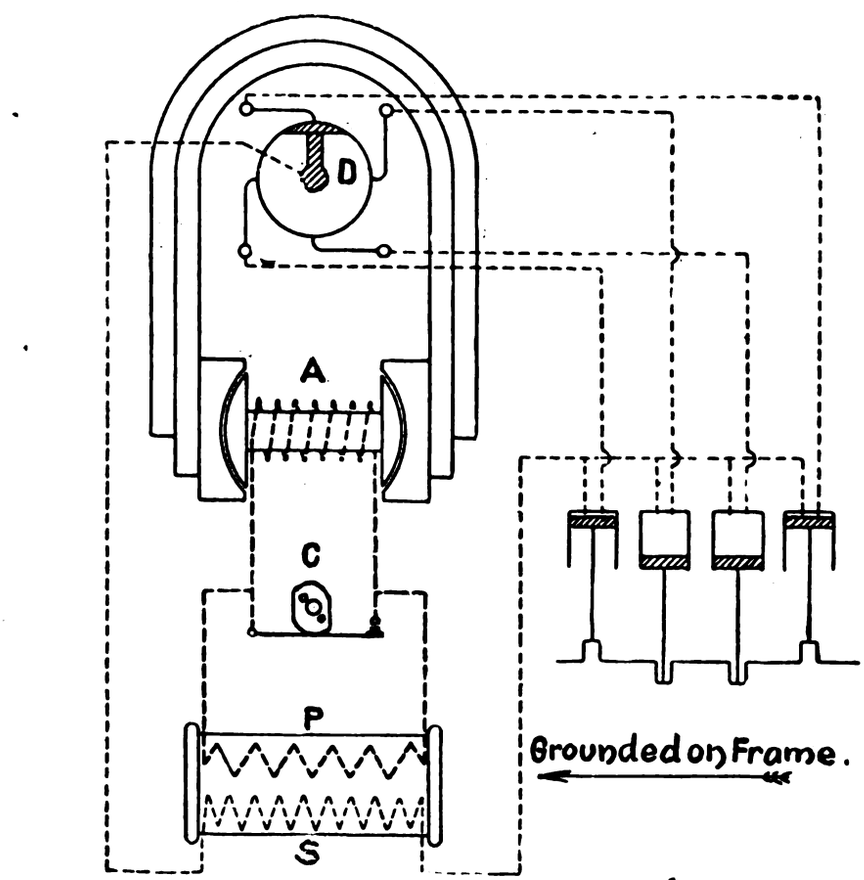


Fig. 7.

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sending the current through the primary winding of the coil. As there are two high points on the cam, this is done twice for every revolution of the armature, which gives but one secondary impulse per turn as the distributor is geared to run at half the speed. The magneto itself must accordingly run synchronously with the engine, and as it is timed with the latter a direct form of drive, such as gearing or sprocket and chain, is imperative.

A word as to the most likely places to look for trouble should the machine apparently refuse to work will not be amiss. It must be borne in mind that two of the chief connections, that at 6 and 7 in the primary and at 13, Fig. 3, on the secondary distributor disc, are made through the medium of small carbon brushes. While this is a practical method for the purpose, these small pieces of carbon are apt to wear; cylindrical carbon sticks are an extremely common article with the electrician, and it is not difficult, with the aid of a file or emery, to replace these brushes from a stock piece of material, but it is advisable for convenience sake to carry spares, which cost but a few cents. When worn down far, these brushes will not make contact and need renewing, but they may sometimes give trouble; this on the primary, through being doused with oil and forming a glaze over the end of the brush, or again at the latter place, dirt or other foreign matter may find its way between the brush and its contact, although this is well guarded against.

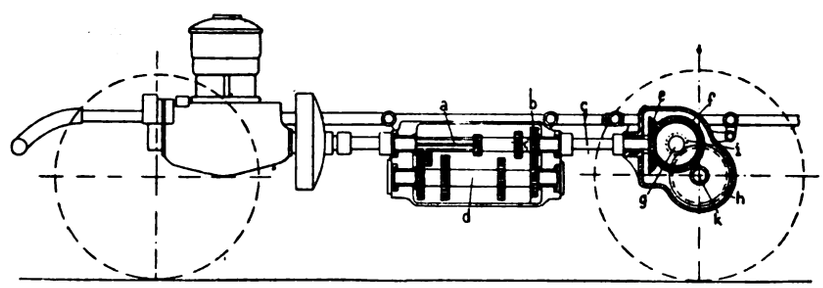
Such things are not apt to disturb the secondary owing to its high tension. Permitting moisture to get on the distributor disc, 16, or its support carrying the terminals, is apt to cause the current to leak or jump from one to another. The result of long wear on the large platinum points of the circuit breaker, or of the derangement of the cam and rocker, may cause a cessation of operations at this point, which is, however, very unlikely. As the machine is made with ample sized bearings, and has liberal provision for lubrication, besides being very substantially put up in every particular, the foregoing practically sums up the ills to which it may be subject, and of these none but the first should happen, and that not more than once in a season. It goes without saying that a little intelligent supervision should prove an ample preventive for any, as inspection will show when the brushes have worn down and need replacement. The armature is solidly enclosed in what is practically a hermetically sealed case, so it is immune from harm. The parts shown in Fig. 2, not already mentioned in detail, are 17, which is the end plate carrying bearings for both shafts, with a grease box and wick lubricator on the armature shaft, and 18, which is a backing of heavy fibre placed behind the panel, carrying the collector fingers and terminals to insulate it.

Differences between union conductors and motormen of the street railway line in Paducah, Ky., and the company, because of the employment of non-union men, have led to a general strike. The union men will start an automobile service in opposition.

REDUCING SHAFT STRAINS

How De Dion-Bouton Have Answered Some of the Demands of the Bevel Drive.

It is a recognized principle in the design of cardan drive mechanism that the alignment of the various parts shall be such that under conditions of normal spring deflection the driving shaft shall be as nearly as possible in a straight line, so that the frictional resistance which comes with the working of the elements of the joints may be reduced to its lowest possible amount. Ordinarily there are but two methods of approximating the desired result, the first being to arrange the entire power plant on an incline plane running from the transverse centre of the motor to the centre of the rear axle, and the second being to keep the engine and transmission gearing level, but to lower it so that the angle of the drive shall be reduced as much as possible.



To reach the desired end by the latter means, which is the more commonly employed of the two, involves lowering the motor until its crank axis coincides with the axis of the rear wheels. This, however, though practically achieved in certain machines, so reduces the road clearance of the car that it is rendered of little use for touring purposes in many localities, and for this reason many designers are content simply to approach the desired end without actually attaining it.

A method of overcoming the difficulty of combining a motor which is rationally high up in the frame, and at the same time securing a driving shaft which is in concentric action under normal conditions, has just been perfected by the French house of De Dion Bouton. This, though introducing an extra gear shaft and pair of gears, nicely accomplishes the desired result, and at the same time does away with the inordinate strains which are usually put upon the live axle through the side thrust of the bevel driving gears by using a spur gear drive for the differential.

The system, which is here shown diagrammatically, utilizes a three forward speed transmission, direct connected on the high gear, which has the lay shaft placed beneath the driving member. As shown in the cut, successive positions of the sliding member upon the shaft, A, give the various speed ratios through the lay shaft, D, with its gears, and the pinion, B, which is fast upon the cardan shaft, C, culminating with the coupling of the sliding member with B, for the direct drive. The bevel gear, E, fast to shaft, C, meshes with another, F, of sensibly equal pitch, which is keyed to a short transverse shaft G. Upon the same shaft is also mounted the pinion, I, which meshes with the gear, H, surrounding the differential casing. The gears, E, F, I and H, are all inclosed in a casing made integral with the rear axle construction.

In this way the ratio of the gears, I, H, being varied to suit the taste of the designer, and their size determining the height of the driving shaft, the direct drive is proportioned to suit the power of the engine, the cardan joints are relieved of all work under ordinary conditions, and the side thrusts of the bevel gearing are transferred from the differential mechanism to that of the smaller shaft, which is especially adapted to withstand it.

To Keep Tools in Order.

One of the greatest perils of motoring within city limits is that from skidding on wet and greasy pavements. Frequently a machine which will answer true to the steering wheel on perfectly dry or perfectly wet streets develops most erratic tendencies on the same turns and when driven at the same rate of speed on a slightly wet surface. In this connection, it is well for the driver to bear in mind that no matter how great the virtue of this or that anti-skidding device, the only sure preventive is slow speed.

One of the commonest habits of the careless or indifferent driver is to jumble his heterogeneous collection of tools and repair parts in a box or roll-up case, and let them rattle as they will. Apart from the risk of damaging such parts as extra valves and spark plugs when carried in this haphazard manner, there is always more or less trouble experienced in finding the particular tool needed when occasion arises.

If a proper box with partitions for the different tools is not fitted, the extra parts should be wrapped in cotton waste or rags and carried in separate receptacles such as cigar boxes. Washers and nuts may be strung on copper wire, while the larger tools, such as spanners, wrenches, files, hammer, screwdriver and the like, are best carried when rolled up in a stout piece of cloth which should preferably be fitted with pockets for each article so that they cannot shake loose.

Complete outfits of tools for this purpose are now put on the market in cotton lined leather rollers of this kind, but in the absence of such an aid, if the cloth be tightly wound over and over so that no two tools touch, the package can be completed by strapping or tying, and it may then be placed anywhere without danger of rattling, or it may be placed in the tool box on some waste without the preliminary of fastening.

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MAKING GEAR SHIFTING SURE

British Device that Automatically Controls the Lever and Prevents Slipping.

One of the most persistent difficulties which the beginner has to overcome in learning the operation of a car which is fitted with a sliding gear transmission, in which the changes are effected by means of a lever sliding over a notched segment, is that of overreaching the proper positions of the lever in making the changes so that when the clutch is let in the gears are found to but partially in mesh. Frequently when the tyro is nervous the lever is carried beyond the proper point to such an extent that the gears reach the neutral point, and under such circumstances the result is exceedingly trying both to the ears and to the mechanism as well. With the so-called selective system there can be no danger of doing this, as the movement of changing the gears is absolutely regulated by the gridiron.

In order to secure the positive action of the selective system without the added complication which it entails, an English inventor has recently perfected a mechanism by means of which the gear shifting lever is automatically stopped when the gears are in proper relation for each drive, and which will not permit of its being again moved until the pawl handle has been dropped and again raised, thus doing away with all possibility of slipping through the gears into neutral inadvertently.

In this mechanism, which is outlined in Fig. 1, the latch, B, instead of being permanently attached to the pawl rod, A, is shaped at its upper end to engage the catch, C, which is hinged to the lower end of the rod. Normally this catch is held in line with the rod by means of the flat spring, D, which is fixed to the lever, but upon its being pushed to the right it releases the latch, allowing it to be drawn downward by the spring, E, Fig. 2. A short lever, F, pivoted in the main lever has a projection at one end, while at the other is an adjustable screw adapted to press against the catch and release it when the part is moved. These parts are all attached to the main lever and move with it, except that the latch, B, is released by the lever, F, when the latter is moved and thereby freed from it. The segment used is like that used ordinarily, except for a set of supplemental notches cut into the side to correspond with the regular notches on the top. Into these supplementary notches the lower end of the lever, F, drops as the latch is seated, and by this means allows the catch, C, to grasp the latch. As the main lever is moved toward its next position the lower end of the small lever, F, is pushed outward by the segment, which is shaped for the purpose and acts as a sort of cam, until it releases the catch, C, by pushing it to the right, and thus allows the latch, B, to be drawn down upon the top of the segment by the spring, E. As the lever reaches the first notch in order it drops into it, locking the gears in position. In order to again alter the position of the lever it is necessary to release

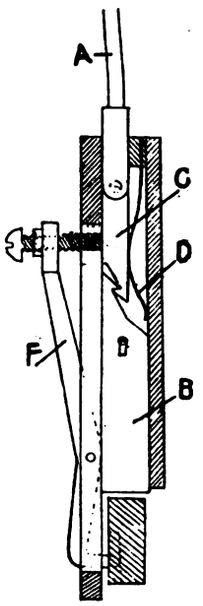


Fig. 1.

the pawl handle, when the spring, G, Fig. 2, draws it down and allows the catch, C, again to engage the latch.

By this means the choice of position for the lever is taken entirely out of the hands

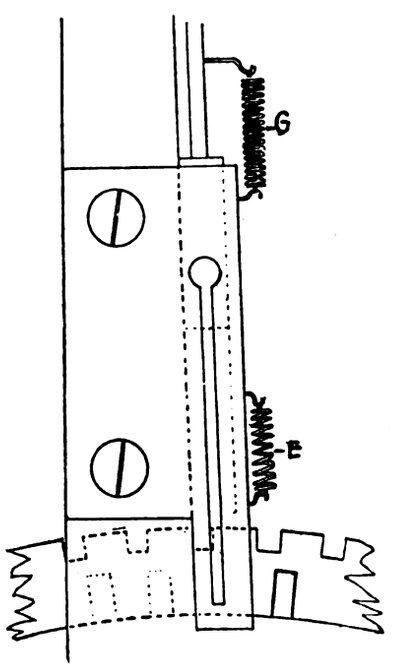


Fig. 2.

of the operator, and all that is required of him is to move it until the latch brings up in the notch, when he must release the pawl handle in order to further change its position. The device is ingenious, and should be of especial value to beginners, while it may also serve to remove a considerable source of worry from the mind of many an older and more experienced driver. That it will work to advantage there can be little doubt, since it is in principle the exact counterpart of a scheme which was used for several years upon an American car which has since become obsolete.

Hindley's Steering Gear.

Although now generally accepted as the standard mechanism for automobile steering gears, the worm and segment as generally constructed is open to several objections, chief among which is the tendency to inordinate wear with its attendant backlash. This is in a measure due to the materials used in the gears, but is perhaps equally as much the fault of the design. In the Hindley steering gears, which are made by Morse, Williams & Co., of Philadelphia, Pa., all likelihood of trouble from either of these sources is avoided, first, by the use of "forty-carbon" forged steel stock in the gears and Parson's manganese bronze in the casing, and, second, by using the Hindley spirals. In contradistinction to the ordinary straight cut spirals, the Hindley gears have concave faces, flat contact surfaces, and have also three times the actual wearing surface and have absolutely no backlash. These gears have also been used to advantage in driving the two-to-one shafts of gasolene engines.

Pittsburg's Non-Puncturable Tire.

Another "absolutely punctureless" automobile tire has been presented to the public with the best wishes of the inventor. This one comes from Pittsburg, and is the production of one James H. Swain. It is technically known as an armored tire, and is made by the H. M. S. Armored Tire Co., of Pittsburg. In general construction it is not unlike most of the tires already on the market, with the exception of a layer of impervious material which is interposed between the tread and the inner fabric, and constitutes the feature of the invention. This layer is made up of a series of strips of vulcanized fibre, each wound with a wrap of cotton braid and imbedded in the casing. The extraordinary toughness of the fibre is supposed to furnish complete insulation for the inner tube, while its flexibility when taken in thin strips is claimed to be so great that no appreciable loss in resiliency will be experienced from

Tightening the Babbitting.

Every now and then an inquiry is made as to the best method of tightening babbitt in a journal box. There have been ways and means exploited of doing such work, but the only best way is to run a new box and have the box hot when the metal is poured. To do a job of babbitting and have it theoretically and practically correct would call for having the box as hot as the metal, so that both might cool and shrink together. That is naturally out of the question in ordinary practice, but by keeping this fact in mind, the box should be as hot as possible when the metal is poured.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau Street, New York.

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THE LADY AND THE FLY

Which Illustrates One of Those Troubled Occasions When the Sweet Thing Proffers Advice.

"Have you ever gone over the car from the rear tire to the water plug in the bonnet while the particular fair charmer who was your companion stood by and made idiotic suggestions as to what the trouble was until you felt that if you did finally get the car going the first place you would head for, would be the funny house? No? Well you have something yet to live for. Either your women friends are not of that type or your luck in avoiding breakdowns must be phenomenal when you have them along. There have been times when I was as certain as I'm standing here now that if Alice didn't stop telling me to look into that thing there, I think it's twisted" or something similar, I would eat her head off. Strike me flat if we haven't come as near to breaking it off half a hundred times as any engaged couple ever does without slipping over the line, just over some roadside derangement.

"Take women generally and they're content to sit in the tonneau and look placid while you grovel around and get yourself filthy with your temper on a raw edge. I suppose a man looks so all-fired businesslike when he gets himself covered with sweat and grease—sleeves rolled up, a monkey wrench in one hand and something equally vicious looking in the other that the dear things think you could run a whole machine shop single handed. They're annoyed at the delay, of course, but it's all in the day's outing according to their reckoning. Certain that they'll get home all right, and have a good time at that, for even if the machine does stall so that you can't get another kick out of her, why you're good for the car fares home no matter where it is—and if it's late, so much the better, for that means a dinner on you in the bargain.

"It's truly marvellous what a surpassing confidence they have in your ability to get there at all times. That is the placid, take it easy kind that I've just been telling you about, but every once in so often you strike a tartar; one of the ilk that you couldn't chain into the tonneau when you're stopped on the road. Down on the ground with a wise air, almost as fast as you are with a 'now I wonder what's the matter?' air in every move. It does beat the Dutch, some of the suggestions they will make to a fellow. They do it just about the way they back a horse—like the jockey's looks, or his colors happen to match their hats or some other equally certain way of picking the favorite every time. If I were given to losing my temper readily, I certainly would be apt to lay violent hands on a woman when she daintily holds her dress away from the wheel with one hand and with the other points to the flywheel or something else that happens to strike her fancy and tells me 'look at that thing, I'm sure there's something the matter with it.' You're trying to make up your mind whether to dismantle the carburetter or to recollect whether you filled the gasolene tank or not before starting and you don't like to go back to look at it for fear of getting the laugh. Under such circumstances the imperious command to 'look at that thing' disturbs your train of thought and almost incites you to deeds of violence.

"I have had lots of experience with trouble and trouble hunting and I flatter myself I know about where to look for it generally, but in spite of that I always believe in the crank as a sovereign remedy and I don't give up winding until she refuses to cough absolutely and I'm done up. Yes, I know it's foolish, but in spite of all the advice to the contrary and the information handed out by the technical wise ones in the papers, to always look for the cause of the trouble if the motor doesn't respond after half a dozen turns. There are occasions when I'm obstinate enough to take another whack at the crank as soon as I get my second wind and that without having tinkered with anything in the meantime. What is more, I have had the motor start when I was about ready to drop from exhaustion—such is the perversity of some of them.

"But to get back to the eternal feminine, I'll tell you the way one girl at least got the reputation of being a wise one and the joke is on me too. You remember about two month's back, we had the usual annual visitation of country cousins up at the house. Two girls—stunning lookers, both of them and their young brother. We make it a point to put in about three or four weeks up at their place in the country every summer, so its our time to look pleasant when they descend on us in the winter and of course, it's up to me to show them the sights and do things generally. Of course, the old lady comes along with them, but she doesn't count except on the theatre tickets. I had become the proud owner of a car between visits, and they were crazy to ride in an automobile. One or two of them owned up in the hamlet they hail from, but I never found out until afterward that one of them —not automobiles—but the sisters, the elder one, was crazy on the subject and had been studying and reading up everything connected with cars that she could possibly lay her hands on.

"They weren't in the house twenty-four hours before I found out my life would be a burden until I put my car through its paces for them. Took them all over the city and then the elder one got tired of 'city riding' as she put it; she wanted a long spin in the country—wanted to see what the car could do in the way o' speed.

"There was no way out of it, so I mapped out a trip to cover about a century and a half—at least they did and I had to kowtow and keep them from making it five hundred miles. Distance looks insignificant as the map grows smaller and then what does a woman care for a few inches more or less on a map. 'We might just take a run off here,' one would suggest, pointing out some spot only a finger's breadth out of the line of the circle they were trying to figure out. That's me, of course, I put up a holler first thing; began to tell them how far it was, poor roads and all that, but it didn't do me a bit of good for before I was half way through my little kick they'd have forgotten all about the place I was jawing against and have found another twice as bad. Too far, I'd start off. 'Too far, they'd all echo; just that little bit from here to there.' But I finally got them to leave it all to me and hid the map.

"With enough lunch stowed away in the tonneau to feed a man o' war's crew, we got away bright and early next morning and everything went just as smoothly as the "they lived happily ever after" end of a novel, until with a good century between us and home and only a few hours of daylight left we started back. Hadn't got ten miles before she began to miss. The motor would run smoothly for a few minutes and then begin to fire spasmodically and slow down and just as I would be quite sure she was going to die for good, each time she would pick up again and race off. The way I had to manipulate that clutch, spark and throttle all at once to keep her from laying down altogether was a caution. Once or twice I was sure she was stopped for good, but got the clutch out in time and with one or two preliminary coughs just on the last turn, off she'd start again. But there had to be an end of it and finally I didn't manipulate things just right and that was where I gave up. Tell the truth, I was glad of it for I was downright weary of fussing along at eight miles an hour by dint of working the clutch in and out to keep her going. I seldom come to earth to investigate as long as the motor will run and turn the drivers, but that was where I was glad to get down.

"Stretched around a bit without even looking at the engine, just as if I knew all about the trouble and didn't give a hang, sort of a confidence inspiring dodge and it worked. Then I got at the bonnet and lifted up one side. Nothing wrong in sight and not over hot so I started for the crank without touching anything. A turn and a half and it started off at eight hundred a minute just as nice as you please, and I straightened up and looked the part. I felt like the real thing, but before I could climb back in the seat there was a sickening halt in the regular hum, followed by spasmodic coughing and finally another lay down. We had two sets of batteries and as a preliminary I shifted the switch on the dash, although I did not know which point represented the freshest set by this time because I had shifted the switch back and forth a dozen times when the trouble first appeared and before we had to get down to look for it. But it looked business like and I clutched it by priming the carburetter before taking another shift

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Blazing a Way Through a Canadian Forest.



AN INCIDENT OF A TOUR IN QUEBEC.

at the crank. This time the first turn over compression set her going with a roar and I thought it must have been the battery after all.

"I won't weary you with repetition, but take my word for it we didn't get half a mile before going through the same performance and we repeated it every half mile for about the next five it seems to me, until I was desperate and finally resolved to fix things right if I had to dismantle the whole car. It was getting dark and at the rate we were going we were due home some time the next day so something had to be done. The spark was O. K. on either set of cells. She would invariably start with very little cranking so I didn't bother to look at the plugs, although my instructress had her eye on them. She had just got down out of the tonneau to stretch a bit and had assumed command. Have you looked on the inside of that thing—the what you call it—pointing an imperious finger to the junction of the four exhaust pipes. That thing, I echoed, putting my finger on the hot pipe unconsciously, but taking it away quickly enough you can be sure. No silly, that thing on the other side, the carb—whatever you call it. Oh, the carburetter. I almost groaned. I had had it all down only ten minutes before—the tank was half full and I had crawled on my back the full length of the car to see that there were no breaks or kinks in the pipe.

"The moment she saw me burn my hand on the exhaust pipe, she knew she was wrong and shifted her ground. While I had only had the carburetter down a few minutes before I didn't like to say so, because I hadn't located the trouble and the engine didn't perform much better, although I couldn't for the life of me see what was stopping the gas for I had sucked my mouth half full of gasolene in testing the spray nozzle. First I blew down into it a couple of times, but wasn't sure of it, so like the boy with the soapy water and clay pipe, I tried drawing in for a change and the result didn't sweeten my temper any I can tell you. When the dear young thing told me to take that thing apart and clean it, just as if she were ordering a maid to wash the dishes, I was about ready to boil over. But I didn't. Never mentioned a word about having been all through it not fifteen minutes before, but set about it as if I had never thought of such a thing. Had it well down when she grabs one of those fine little hair pins out of her hair and says, 'here, take this and run it through that atomizer thing.' I did just as I was told and may the drinks be on me for the next year to come if jobbing that hair pin through there didn't bring out a fly. Just a common, ordinary, everyday fly. Don't ask me how it got there. That's too much for me, you're entitled to as many guesses as I had and welcome to them. But it's easy to see how it caused all the trouble. Worked up and down the tube and got caught in the spray hole every now and again. Then the liquid dropped back and Mr. Fly with it and let some more come out.

"Didn't have a bit of trouble after that; came home on the high all the way at better than forty per. Made the girl's everlasting reputation for a wise one about a car, but save me from the woman who likes to direct operations while you do the work, for all that," concluded the motorist with the reminiscent look in his eye.

Stockholm, Sweden, now boasts the grand total of 151 motor cars, including those owned by members of the royal family, and the number is said to be increasing. The fact that nearly all the towns and villages of the country are equipped with electric lighting plants would seem to indicate that there is a good opening for electric vehicles.

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The New Model 1906

Rainier

30-35 H. P.

What is the automobile buyer going to do when he is strenuosly told that each and every one of the 1906 cars is THE BEST CAR IN THE WORLD?

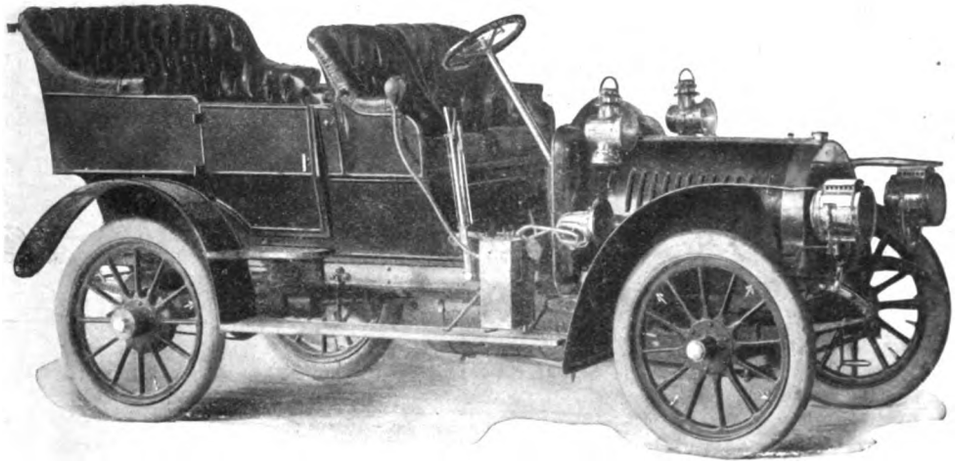
He is going to do a little investigating.

He is not going to be attracted nor distracted by the whirlwind of words with which one car after another comes before the public on paper.

When he gets down to business, he will find the RAINIER in the front rank of cars that have won renown and made fast friends by actual achievement. He will find that in every inch of metal and wood, in every working part, in every line, the Rainier as it will take the road in 1906 is the very embodiment of strength, compactness, lightness and beauty —now more than ever before "The Pullman of Automobiles."

We want good Rainier agents in all unassigned territory. We can give them a car to sell that WILL sell, and that will make a new salesman of every purchaser. We stand back of the Rainier with the broadest and most liberal guarantee ever given.

Correspondence invited.



ENGINE.	30-35 H. P., 4 cylinders, water cooled.	**VALVES.**	Mechanically operated, inlet and exhaust interchangeable.
IGNITION.	Sims-Bosch Magneto—make and break spark.	**CARBURETTER.**	Float feed, requiring no adjustment.
TRANSMISSION.	Sliding train. 3 speeds forward and one reverse.	**BRAKES.**	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
REAR AXLE.	Bevel gear drive, clutch driven hub. Ball bearings.		
FRONT AXLE.	I Beam section. Ball bearings.		
FRAME.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.	**BODY.**	Full aluminum, double side entrance.
		EQUIPMENT.	Two head lights, 2 side lights, 1 rear light, 1 horn.
WHEEL BASE.	104 inches.		
WHEELS.	Imperial whalebone, grade A 2nd growth hickory.		
TIRES.	Continental 34 x 4.		

Price, $4,000.

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinder—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body

Price, $3,500.

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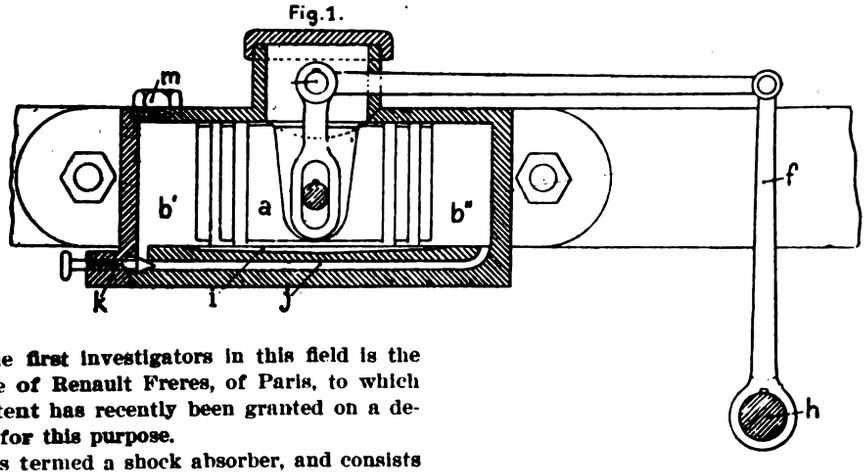
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RENAULTS' SHOCK ABSORBER

Those Veteran Manufacturers Use Glycerine and Water in their Device—How it is Done.

Following the general trend noticeable in the employment of auxiliary spring devices on the part of car owners who have generally taken to supplementing the suspension originally supplied by the designer by the addition of various forms of shock absorbers to be had in the open market, the designers themselves have begun to do likewise. One of the first investigators in this field is the house of Renault Freres, of Paris, to which a patent has recently been granted on a device for this purpose.

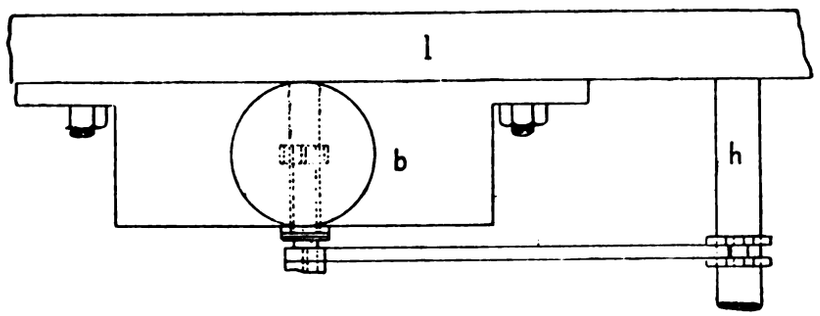
Fig. 1.



It is termed a shock absorber, and consists of a small sylinder affixed to the frame of the chassis at a convenient point. This is partially filled with a mixture of water and glycerine or heavy oil, and is fitted with a piston A, Fig. 1, the normal position of which is central, as shown. The movement of the latter is transmitted through a series of levers to the axle of the car, H, or it would be more accurate to state that the brunt of the shock received by the latter are transmitted to the glycerine cylinder and there absorbed in much the same manner as that commonly employed in taking up the recoil of modern high powered guns. The chambers, b' and b", before and behind the piston, are connected by a groove, or depression, in the wall of the underside of the cylinder, I, the depth of which is greatest at the centre and gradually decreases as it approaches each end. This permits of a small portion of the liquid passing from one end to the other reciprocally, and the canal, J, which may be closed more or less as desired by the adjusting screw K, is for the same purpose. These permit the device to oppose much or little resistance to the shocks received by the axle, and to absorb them slowly or otherwise, according to the needs of the car to which it is attached, and much after the fashion of the common door check, which works on very much the same principle and can be set to close the door slowly or quickly. An opening is provided at M through which to replenish the liquid.

The action of the device in operation may readily be understood from the sectional sketch shown in Fig. 1. Upon the road wheels violently striking an obstruction or dropping into a hollow, the excess force that is not absorbed by the tire is transmitted to the spring, which is usually connected directly to the axle. This causes the latter to rise, and it in turn transmits its movement to the lever F, keyed upon it, and so on until it reaches the piston, where it is absorbed by the latter compressing the liquid, against which it must act. The depression, or groove, I, being largest at the centre, it permits of a more or less rapid escape of the liquid at first, so that for the moment the movement of the piston is rapid, but once past the centre it closes this outlet and moves more slowly, as the only escape is then through the channel, J, and past the regulating screw at the end of it. Thus it provides sufficient mobility to take up slight shocks, and at the same time offers a great deal of resistance to more powerful blows, its braking effect preventing the springs from coming together. By means of the regulating screw it may be adjusted in accordance with the load imposed upon it. Its location upon the car is shown in Fig. 2.

Fig. 2.



WEISS'S NOVEL MUFFLER

Employes a Valve to Obtain Free Exhaust and Makes Some Strong Claims for It.

Among the various problems which have taken up their full share of the gas engine designer's time from the beginning of the automobile movement up to the present, that of suitably muffling the exhaust gases so that the noise of the wasting energy should be abated, and at the same time there should be no back pressure to detract from the effective power of the motor, has obtained its full measure. The idea of giving the gases an opportunity to expend during the muffling process was early gotten hold of, but the usual application of it in the use of a series of chambers through which the gas had to pass on its way to the outer air, and which were connected by means of a great number of tiny holes, caused a considerable loss of power.

A new device which is intended to do away with the greater part of the noise of the exhaust, and at the same time not to interfere with the freedom of the gases' exit from the cylinders, is the invention of L. T. Weiss, of No. 266 Graham street, Brooklyn, N. Y. In this muffler, which is constructed upon rather novel lines, the gases from the cylinders are discharged into a closed receptacle which has a volume nearly or quite five times the cubic contents of the cylinders. Directly after the exhaust valve has opened, but before the pressure within the muffler has had opportunity to rise to a point anything like that within the engine, a valve which communicates directly with the atmosphere is opened, and the discharge takes place through this until the main valve has closed and the pressure has been reduced to that of the atmosphere.

Thus, at the time of release, when the greatest amount of noise is generated owing to the impact of the high tension gases upon those which are at rest in the muffler or in the air, in case no muffler is used, the discharge being into a closed chamber, is absolutely silenced, while immediately thereafter, when the pressure has fallen to a point considerably below its maximum, the discharge to the atmosphere commences, but, being carried on through an ample expansion chamber, the products of combustion are deprived of the greater part of their energy, and hence the sound is not at all offensive.

The particular advantages claimed for a muffler of this type are, first of all, that the free exhaust which is obtained in this way insures a freedom from soot upon valves and cylinder walls which is not to be obtained in any other way, and, second, that by freely exhausting the products of combustion the incoming mixture will be freer than it otherwise would be, and that on this account the charge will be much less diluted and will be proportionately more powerful.

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Dangers of Driving in India.

"Anyone able to get over a hundred miles of main Indian road without accident should be able to drive anywhere" is the opinion of an East Indian devotee of the car, expressed in the course of an article on the delights of automobiling in that far off country in the Motor Car Journal. "In a distance of thirty miles," he continues, "generally between 400 and 500 carts are passed, all drawn by bullocks, assuredly the most stupid animals in existence. Perhaps, though, I should give their drivers the palm in this respect, as it is absolutely impossible to guess what they will do.

"As a rule, these men are lying sound asleep on the top of the load, with a huge fold of cotton over their heads; it can therefore, be guessed what chance there is of even the most powerful horn reaching their ears. Probably after slowing down and tooting continuously the sound finds its way to the brain, and in another minute or two they begin to realize that there is something desirous of passing them. The result, if annoying, is certainly ludicrous, and can be compared to nothing so much as the sudden disturbance of an anthill. Dozens of naked legs are seen leaping to the ground, the cattle's heads are seized and the poor beasts are pulled this side or that, as the whim seizes their masters. The result is, of course, a general block, only dispersed by the use of some strong language on the part of the motorist. At times, but not too often the string of carts is on one side of the road so that the car can be driven by without disturbing the sleeping Jehus. The outcome, however, is generally disastrous, as the cattle in their terror rush off the road, perhaps down a 10-foot bank, and over go carts and contents. The drivers are always shot clear and I never heard of one being hurt, nor does the upsetting of the cart appear to worry the bullocks, as the peculiar mode of tethering enables them as a rule to keep their feet.

"To overtake a solitary cart is particularly dangerous, as you can never be sure that the man in charge will not pull right across in front of the car, as has indeed, happened to me more than once. Another curious coincidence is especially remarkable here in India; every woman and every chicken, no matter if well on one side of the road, feels impelled on the appearance of the car to cross over, quite heedless of the danger. Except on the main high roads it is very difficult to run along at any speed in this country. For the sake of economy streams and water courses are left unbridged, and many a broken spring is due to suddenly coming on a harmless looking depression without slowing up. The only close shave I have ever experienced was due to this cause, as the spring in breaking prevented the steering gear from turning and the car was off the road before I could pull up; fortunately no harm resulted."

The Canine of Center Square.

As a rule the roadside dog that takes it into his head that it is his bounden duty to scare away all passers by, seldom does anything more harmful than a little raucous vocalizing, but according to a story that comes from up the state, Center Square, a village near Gloversville, New York, has a dog that takes himself seriously in this role.

That seething center of activity is somewhat off the beaten track and automobiles are far from being a common sight there, so that when a family party bowled through in a car, the dog immediately ran out and gave battle to the strange looking monster. He seized one of the front tires in his teeth and was soon surprised to find himself forcibly revolving with the wheel. No one could exactly figure out the following sequence of events, but the result of the driver's concentration of attention on the dog caused a collision with another vehicle and the car took a ditch, sprung the front axle and dumped the passengers unceremoniously. What happened to the dog does not appear.

"Swift, Model 1901, 1902, 1903, 1904 and 1905"—it is all the same car, that has taken four years to build. Its creator, a bicycle repairer and general machinist in a little Down East town, started in four years ago to build an automobile. The result is the "Swift runabout, one speed forward, fifteen miles an hour downhill."

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But if you have a car which you consider almost perfect perhaps you would like a tire fit to associate with it.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

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The Week's Patents.

802,282. Speed Controlling and Reversing Mechanism. Fred A. Gerling, Portland, Ore. Filed June 7, 1904. Serial No. 211,519.

Claim—1. In a speed controlling and reversing mechanism, a driving and a driven shaft, a fixed gear on the driven shaft, a gear and pinion feathered on the driving shaft and adjustable longitudinally of said shaft, a counter shaft, a fixed gear and a longitudinally adjustable pinion on the counter shaft, a pair of parallel rack bars connected, respectively, to the gear of the driving shaft and to the pinion on the counter shaft, a gear connecting the two racks, and an adjusting means connected to one of the racks.

802,284. Starting Device for Explosion Motors. Wilhelm Hagspiel, Ludwigsburg, Ger-

GROUT
New Gasolene Light Touring Car
PRICE, $1,800.
GROUT BROS. AUTOMOBILE CO.,
ORANGE, MASS.

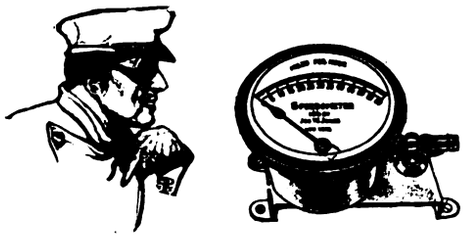
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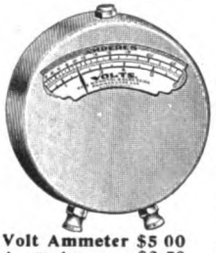
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125 West 32d Street, - - NEW YORK

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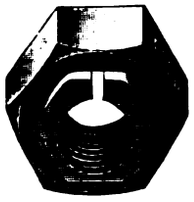


Volt Ammeter $5 00
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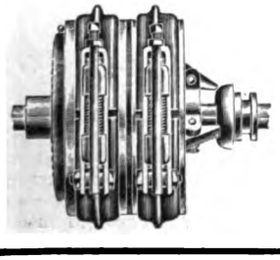
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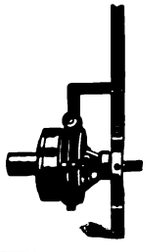
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—FOR—
Automobiles and Motor Boats
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15 cents per line of seven words, cash with order. In capitals, 25 cents per line.

A TEN PASSENGER wagonette; sample car, 1905-1906 model; steam; price and description on application. THOMPSON AUTO CO., Olneyville Sq., Providence, R. I.

FOR SALE—40 horse power, 1905 up-to-date Thomas Flyer. Used for demonstrating purposes. Very best condition. A bargain. C. A. COEY & CO., 1323-1325 Michigan Ave., Chicago.

I HAVE FOR SALE one Olds runabout; one four-cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars, also steam delivery wagons, all in first-class running order. Write for particulars, if interested. K. A GROUT, Orange, Mass

FOR SALE—1903 Winton, oil and gas lamps, side baskets; 1904 style crank shaft, in best condition; 1903 two cylinder Pope-Toledo, oil and gas lamps, in perfect running order; 1904 two cylinder, 10 horsepower Ford, with tonneau, used five months; 1904 Model H Rambler, with tonneau; 1904 Duryea, tiller steer; all in fine running order; make your best offer on any of them. EASTON AUTOMOBILE CO., Easton, Pa.

1904 Model L Rambler, 16-18 h. p., stationary top glass, curtains; newly painted and shoes this season; one Kingston Carburettor; hand spark; just overhauled, all new wearing parts; condition first-class, $675. E. B. REYNOLDS, Chatham, N. Y.

1904 Haynes-Apperson runabout, with full leather top, extra surrey seat and full equipment of lamps, Rushmore Searchlight, tools and extra tire; all in perfect condition; guaranteed so; owner wishes to purchase larger machine of same make; first check for $760 takes it. A. H. ANGER, 316 Third Street, Milwaukee, Wis.

1904 Orient Buckboard Runabout, with body; centre steer; fine condition; $185.00; reason for selling, am getting large delivery machine. J. E. B. WRIGHT, Amarillo, Texas.

ONE 1905, 40 H. P. Thomas, A-1 condition; looks like new; cost $3175 this spring; will sell for $1975; with canopy top, glass front. W. M. MEAD, 22 E. 42d St., New York.

FOR SALE—Model F Cadillac; 4 in. tires on rear and 3½ in front; in first-class shape; 2 extra tubes; 2 oil lamps; 2 7-in. mirror lens headlights, with double generator, all solars. Machine in first-class condition. Demonstration at any time. Address JOHN A. DEIGNAN, Genoa Junction, Wisconsin.

FOR SALE—40 H. P., 1905 up-to-date Thomas Flyer; used for demonstrating purposes; very best condition; a bargain. C. A. COEY & CO., 1323-1325 Michigan Ave., Chicago, Ill.

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many. Filed July 24, 1903. Serial No. 166,909.

Claim—1. A starting mechanism for motors, comprising a shaft having projections, a pair of relatively rotatable elements loosely mounted on the shaft, one of said elements having helical clutch pieces and the other having slots to permit of said clutch pieces engaging the projections on the shaft, said slotted member adapted to cause said clutch pieces to disengage from the shaft when the shaft rotates in an opposite direction.

802,291. Magneto-Electric Ignition Apparatus for Explosion Engines. Gottlob Honold, Stuttgart, Germany, assignor to Robert Bosch, Stuttgart, Germany. Filed April 30, 1902. Serial No. 105,380.

Claim—In an ignition device for explosion engines, the combination, with a generator having a revoluble armature provided with two windings in inductive relation to each other, of a pair of spark electrodes, a circuit in which said electrodes and one of the armature windings are included, a short circuit in which the other armature winding is included, a condenser connected to said short circuit, and means operating synchronously with the revoluble armature of the generator and serving to open and close the short circuit.

802,321. Valve gear for Internal Combustion Engines. Francis M. Rites, Ithaca, N. Y. Filed January 8, 1904. Serial No. 188,170.

Claim—1. In an internal combustion engine, the combination with an engine cylinder, and a valve therefor provided with means normally holding the valve closed, of two valve actuating devices driven at different speeds, means for operating said valve comprising a shaft mounted in a fixed bearing and provided with an eccentric fulcrum, a valve operating member movably mounted upon said eccentric fulcrum, and means, comprising links, connecting said shaft and valve operating member to said valve actuating devices.

802,356. Steering Gear. Fred A. Law, Hartford, Conn., assignor to Electric Vehicle Co., Jersey City, N. J., and Hartford, Conn., a corporation of New Jersey. Original application filed April 3, 1902. Serial No. 101,290. Divided and this application filed July 19, 1904. Serial No. 217,156.

Claim—1. In combination in a steering mechanism, a body or frame base plate, a bearing therein for a rotating steering shaft, a rotating steering shaft, a screw on the lower end thereof, a second bearing in said base plate, a transverse shaft therein, a depending oscillating arm supported on said shaft, interconnections between the lower threaded end of the steering shaft and the oscillating arm including link connections located and moving substantially in the same vertical plane of the steering shaft, as and for the purpose described.

802,362. Anti-Friction Gearing. John M. Green, David E. Lyons and Andrew T. Garey, Los Angeles, Cal. Filed March 22, 1905. Serial No. 251,499.

Claim—1. In an anti-friction bearing, the combination of a sleeve provided with a plurality of peripheral annular flanges near the ends thereof, there being two of such flanges near each end, the outer flanges being higher than the intermediate flanges; bearing rollers intermediate said outer flanges, said bearing rollers having grooves near the ends thereof which straddle the lower flanges or intermediate flanges of the sleeve without being supported by said flanges, and spacing rollers intermediate of said bearing rollers, said spacing rollers extending over the flanges without touching the intermediate flanges and having grooves fitting over the outer flanges and being supported by said flanges.

802,386. Automobile-Horn and Means for Operating the same. Claud H. Foster, Cleveland, Ohio. Filed December 16, 1904. Serial No. 237,059.

Claim.—1. The combination, with the exhaust of an engine, of a horn provided with means for operating the same with fluid under low pressure and means for maintaining a constant pitch irrespective of a variation of several pounds to the square inch in the pressure of the operating fluid, substantially as specified.

802,389. The Ernest Gregg and Thomas H. Hirst, Birmingham, England, Assignors to William Knox D'Arcy, Stanmore Hall, Stanmore, England. Filed December 22, 1904. Serial No. 237,941.

Claim.—1. A vehicle-tire comprising a strong steel band, an outer arch-shaped cover surrounding the same, the cover being strengthened so as to be capable of resisting strong radial tension, and having wired edges, and eyebolts on the wires, substantially as and for the purposes hereinbefore set forth.

802,416. Manufacture of Vehicles, &c. Jacobus Spyker, Trompenburg, near Amsterdam, Netherlands. Filed October 21, 1904. Serial No. 229,507.

Claim.—1. The method of manufacturing vehicle bodies and the like consisting of first constructing a core of any desired contour, perforating the same, and providing the core by electrolytic means, with metallic connecting portions within the perforations and a metallic cover formed with said portions.

802,442. Motor-Vehicle. John A. Carr, Denver, Colo., Assignor of one-half to Chas. J. Koehler, Denver, Colo. Filed November 22, 1904. Serial No. 233,877.

Claim.—1. In a device of the class described, the combination with front and rear axles and a framing carried thereby, of a shaft journaled in said framing, a bearing-block inclosing said shaft, a pivot block pivotally engaging said bearing block, rigid connections between said pivot block and the front axle, means carried by the pivot block for effecting movement of said shaft corresponding to pivotal movement of the front axle, a joint interposed in the length of said shaft for accommodating such movement, and intermeshing gearing carried by said axle and shaft.

802,474. Nut-Locking Device for Vehicles. Abe L. Renwick, Elmwood, Ill. Filed Aug. 15, 1904. Serial No. 220,766.

Claim.—1. In combination with an axle-nut of a vehicle, a spring arm pivoted in the nut, there being a recess in the nut for receiving and holding the said arm when locked in place to secure the nut, and a member at the opposite end of the pivoted arm for engaging the axle, there being a notch in the said axle for receiving said member substantially as described.

802,489. Speed Changing Device. Hans Baerbalck, Hamilton, Ohio, Assignor to Hamilton Machine Tool Company, Hamilton, Ohio, a Corporation of Ohio. Filed November 30, 1904. Serial No. 234,845.

Claim.—1. The combination of a rotative shaft, two series of loose gears thereon, and a hand actuated mechanism arranged to independently lock any gear of either series to the shaft.

802,540. Speed Regulator for Explosion Engines. George A. West, Buffalo, N. Y., Assignor of one-half to Austin M. West, Buffalo, N. Y. Filed November 24, 1903. Serial No. 182,550.

Claim.—1. In an internal combustion engine, an exhaust valve, an exhaust valve stem, a cam for actuating the valve stem, a spring pressed catch normally riding against one side of the crank shaft end of the stem and movable each time the valve is opened to a position in alinement with the stem to prevent closing movement of the valve, a governor arranged within and movable with the actuating cam, the governor including a two-armed lever, one arm of which is weighted, an auxiliary cam adjacent to the active face of the exhaust cam and serving to engage the catch and move the same to release position, and a stud connecting the auxiliary cam to the unweighted arm of the governor, the wall of the actuating cam being provided with a curved slot for the passage of said stud, substantially as specified.

802,560. Rotary Engine. James H. Gamble, Colorado Springs, Colo. Filed June 9, 1904. Renewed August 29, 1905. Serial No. 276,329.

Claim.—1. In a rotary engine, a cylinder having an abutment, a revoluble piston having end flanges, and a reduced intermediate portion, the periphery of such intermediate portion being provided with pockets, and the opposing side walls of the flanges being recessed, pivotally mounted piston wings extending within the pockets and recesses, the walls of the recesses forming supports for the opposite ends of the wings when the latter are exposed to the action of steam, and auxiliary ports extending through the periphery of the piston and opening into said pockets, thereby to permit outward movement of the wings under steam pressure.

802,574. Top for Vehicles. William Lindsay, Pittsburg, Kansas, Assignor of one-half to J. B. Mantonya, Pittsburg, Kansas. Filed March 21, 1905. Serial No. 251,305.

Claim.—1. A collapsible top comprising side frames, top bows permanently connected to the same and hinged thereto, front and rear bows hinged to the frames, top bows hinged to and connecting the front and rear bows respectively, and links connecting the frames with the front and rear bows, one of said frames and its front and rear bows being adapted to fold between the top bows and the other frame and its front and rear bows.

802,581. Lubricator. David Morehouse, Delphos, Ohio. Filed January 30, 1905. Serial No. 243,295.

Claim.—1. In a lubricator, the combination of a cylinder having a tube extending therethrough from one head to the other, and secured at both ends to said heads, and a follower slidable on the tube and dividing the cylinder into oil and steam chambers, the tube having an inlet from the oil chamber at one end and an outlet to the exterior at the other.

802,600. Tire. David R. Salisbury and Oliver D. Salisbury, Owosso, Mich. Filed January 4, 1905. Serial No. 239,546.

Claim.—1. A tire comprising an inner tube, a flexible outer casing inclosing said inner tube upon the sides and adjacent the tread and having outwardly-turned edges, a base band connecting and having its edges secured to said outturned edges and means for securing said edges rigidly to the rim of a wheel.

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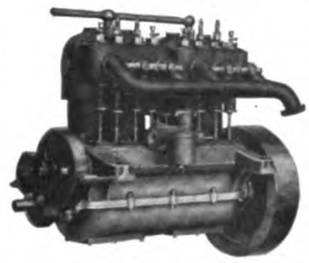
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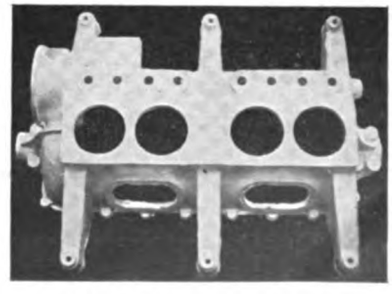
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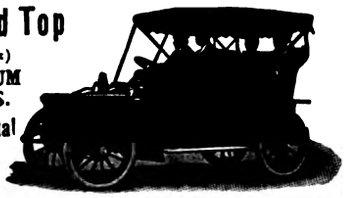
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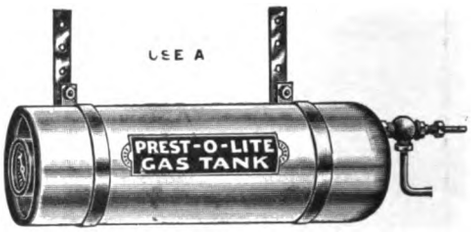
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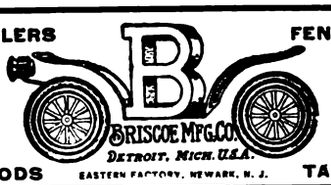
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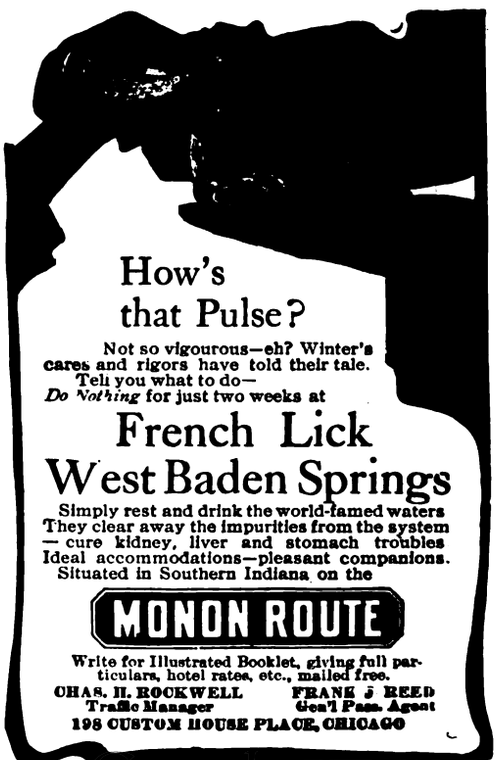
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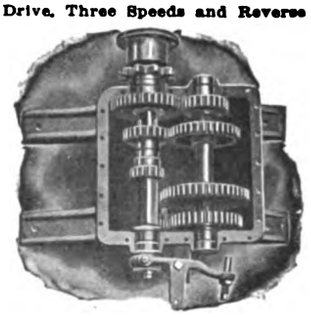
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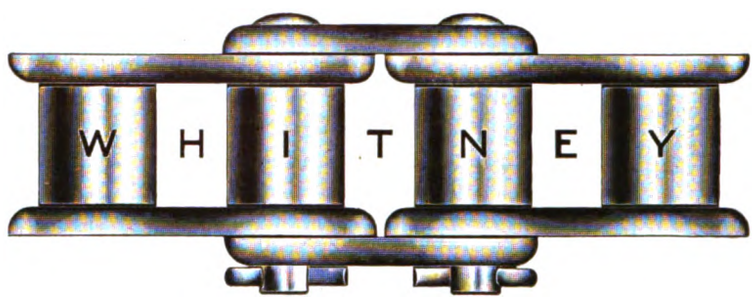
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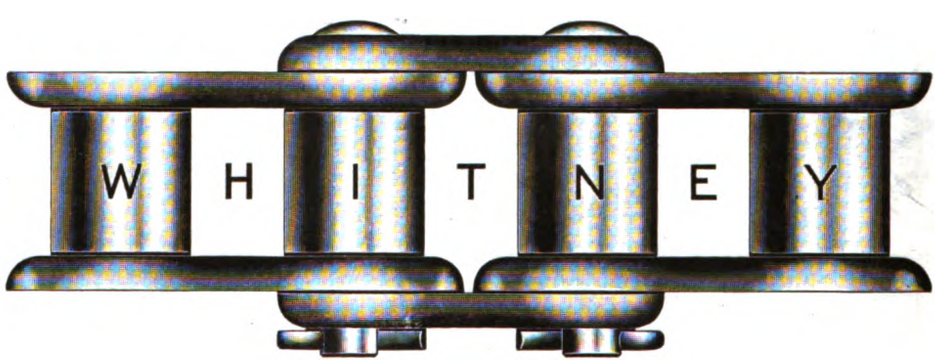
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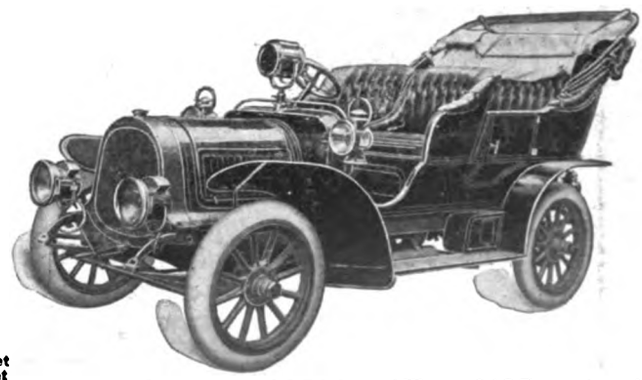
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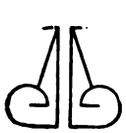
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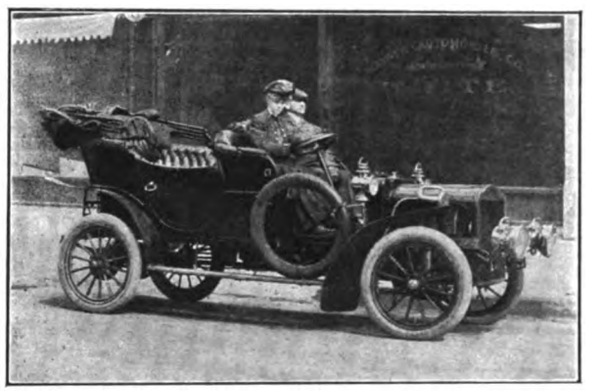
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TALKIN' OF THE COST OF UP-KEEP

The Royal Tourist cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs. Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little touring car or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is made and put together with proper care. Money is freely spent for best materials. That's why!

That is also the reason why we were able to roll our car over in the Vanderbilt Trials and then finish among the first.

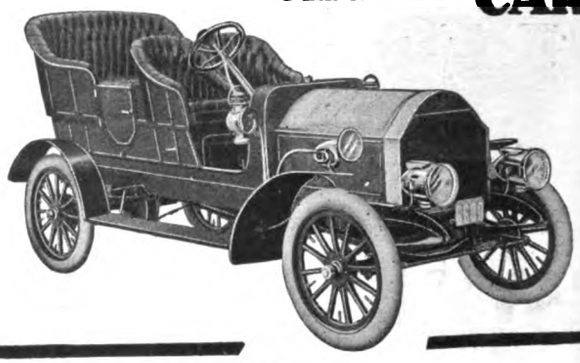
ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., 58th St. & Broadway, New York; G. J. DUNHAM, 182 Columbus Ave., Boston; THE McDUFFEE AUTOMOBILE CO., 1449 Michigan Ave., Chicago; G. W. CAPLIN, 432 South Fifth St., Minneapolis; AUTOMOBILE SUPPLY CO., Limited, 24 Temperance St., Toronto; MOTOR SHOP, 317 N. Broad St., Philadelphia; WESTMINSTER AUTOMOBILE CO., 4396 Olive St., St. Louis.

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.



The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should ***not*** buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the ***two*** cycle two cylinder Elmore engine.

Understand—the ***two*** cycle two cylinder Elmore engine produces ***two impulses every time the fly-wheel turns.***

As you know, the two cylinder ***four*** cycle furnishes only ***one*** impulse every ***fourth*** time the fly-wheel turns.

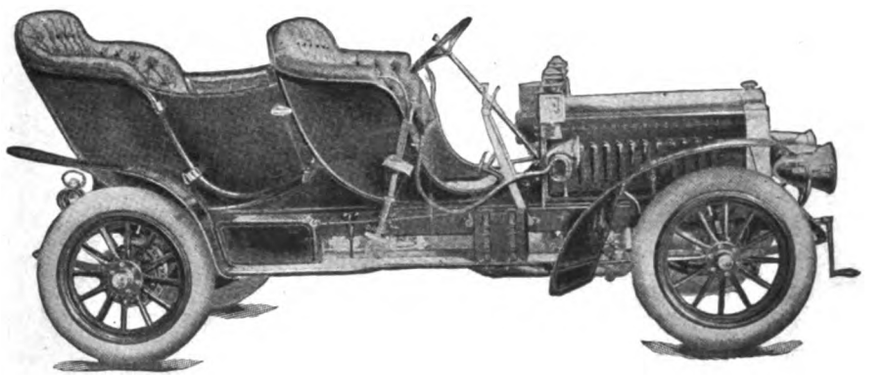
In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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QUEENS



ONE OF OUR THREE NEW MODELS

Motor.	4 cylinder—26-28 h. p.
Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder touring car with detachable side door tonneau list at $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's interesting.

C. H. BLOMSTROM MOTOR CO.,

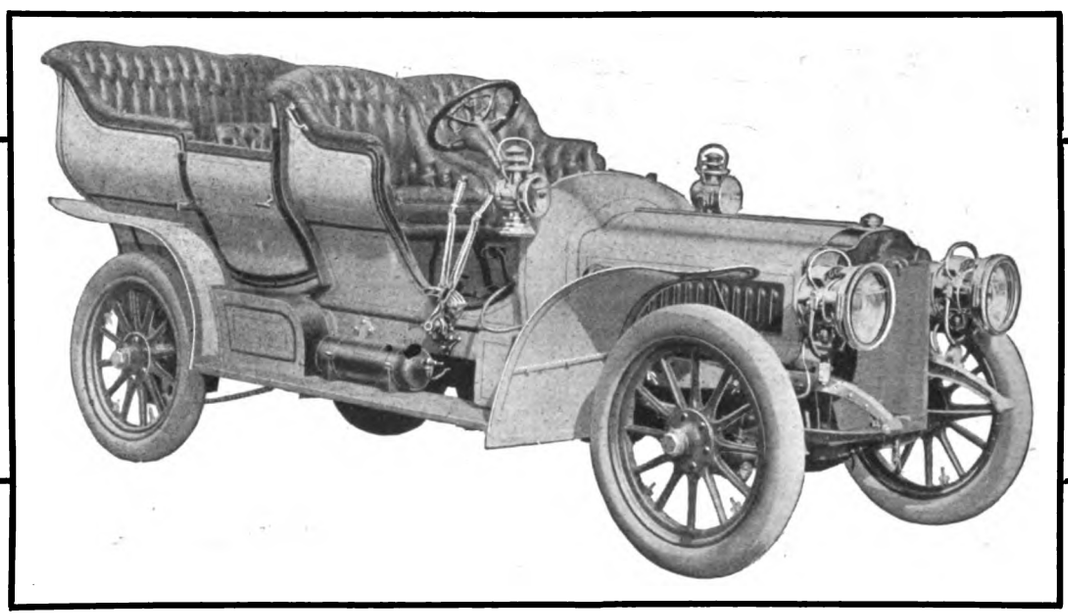
DETROIT, MICH.

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THE NEW THOMAS

Greatly Exceeds My Most Sanguine Expectations.

EXPERTS SAY IT IS A WONDER.



No customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best Car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level and climbs a 10 per cent. grade on the high speed at forty miles per hour, within an hour after it first leaves the shop, it is something that not one Car in a thousand will do.

Under favorable conditions, we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill climbing, quiet operations and mechanical superiority, and cordially urge disinterested Automobile experts everywhere to rigidly investigate our claims and compare our material, workmanship and design with the highest priced Cars in the world—and we will win the verdict.

E. R. THOMAS,

For the E. R. Thomas Motor Co., 1416 Niagara St., Buffalo, N. Y.

Member A. L. A. M.

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FOR COMMERCIAL MOTOR VEHICLES



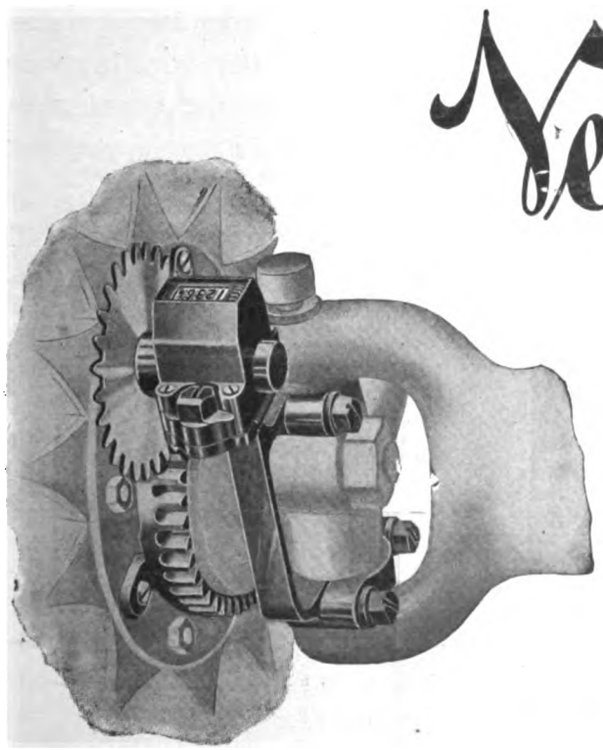
Diamond
SIDE WIRE SOLID TIRES

THEY STAY ON.

The rubber is strictly our own stock.
It combines remarkable resiliency and the finest wearing qualities.
These tires are made in both butt-end and endless patterns.
Our literature concerning sizes, weights, prices, etc., will interest you if motor trucks or other commercial vehicles appeal to you in any way.

THE DIAMOND RUBBER COMPANY,
AKRON, OHIO.

BOSTON—174 Columbus Ave. DETROIT—310 Woodward Ave. SAN FRANCISCO—608 Mission St.
PHILADELPHIA—304-306 No. Broad St. ST. LOUIS—3966 Olive St. DENVER—322 Boston Building.
BUFFALO—715 Main St. CHICAGO—167-169 Lake St. MINNEAPOLIS—611 First Ave. S.
NEW YORK—78 Reade St. CLEVELAND—223 Huron St.



Veeder

"It's Nice to Know
How Far You Go,"
Veeder Odometers.

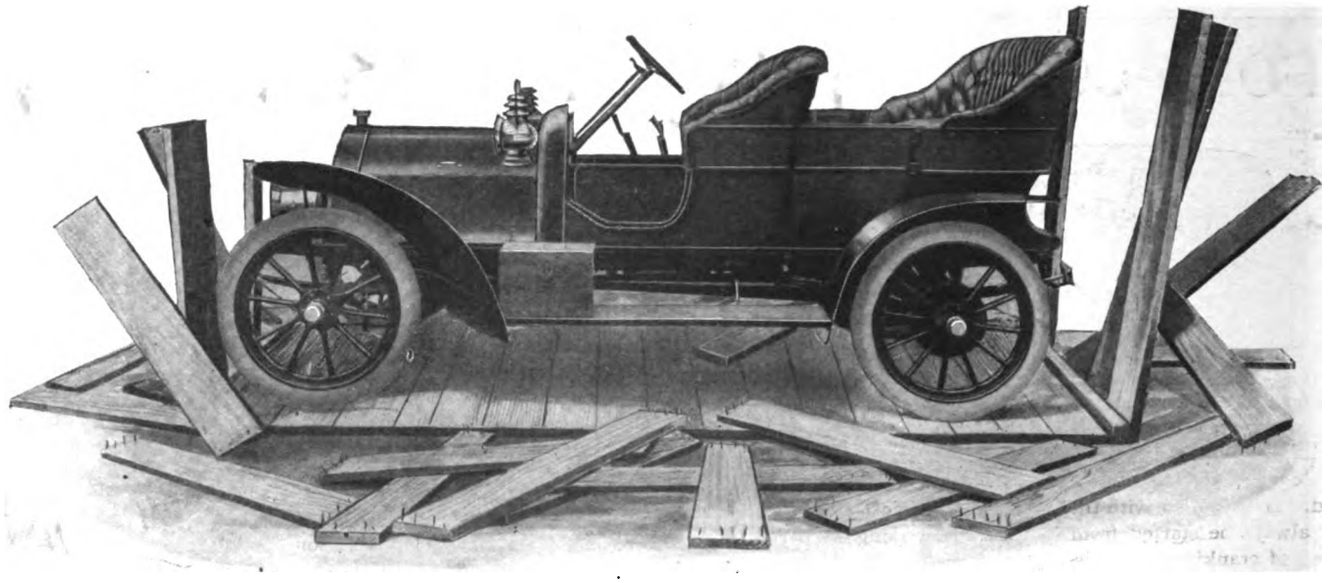
Every Veeder Odometer we send out is designed for the particular make and model car for which it is ordered. That ***insures accuracy.***

You will want an Odometer when you go touring this summer. Ask your dealer or send to us for catalog.

THE VEEDER MFG. CO.,
26 Sargeant Street, Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

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IT'S OUT

The OLDSMOBILE MODEL "S"

A four-cylinder Touring Car of high power, great comfort and most distinctive design, selling at a reasonable price. A careful study in detail of its features will convince you it is the superior of any car in this country for equal money. Examine its lines and then its specifications.

If you are skeptical about the sensation in our announcement, our two-cylinder two-cycle car will convert you—it's up and coming—it has the style, the power and the "ginger" that wins the man who knows, and its extreme simplicity and marked freedom from disorders wins the experienced and inexperienced alike.

OUR PRICES:

Oldsmobile Model S, four cylinder, four-cycle	**$2250**
Oldsmobile " L, two-cylinder, two cycle	**1200**
Oldsmobile " B, Standard Runabout	**650**

PRICES INCLUDE OIL LAMPS, TUBULAR HORN AND COMPLETE TOOL EQUIPMENT. TWO ACETYLENE LAMPS AND GENERATOR WITH FOUR-CYLINDER CAR.

THE LINE TO TIE TO FOR 1906

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

Name .....

Address .....

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name .....

Address .....

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year.

Name .....

Address .....

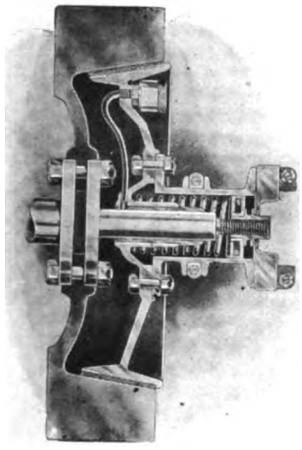
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OLDSMOBILE

¶ Without going into minute details of construction of Model S (which we will gladly send you upon application), we will mention some of its features which stand out prominently, giving this machine its **marked individuality**

The Motor is of the four-cylinder, vertical, water-cooled type, developing 24 to 26 H. P. The cylinders are cast in pairs and are water-jacketed in such a manner that only the cylinders themselves are cooled, but the valves as well. All material used in the construction of the motor, as well as in every part of the machine, is carefully analyzed and tested, and each cylinder is thoroughly inspected. In common with the most up-to-date cars the motor may nearly always be started from the seat, thus doing away with the necessity of cranking. This is a very attractive feature.

The Crank Shaft is of special carbon steel and runs in long bearings. An oil pump in constant operation forces oil to all main bearings.



Cross Section of Clutch

The Transmission is of the sliding gear type, having three speeds forward and one reverse.

The Clutch is of the "dish pan", or cone type, fitted with leather surface, and a simple spring device which allows the load to increase gradually, thus doing away with any jerking in starting.

The Control is by single lever within easy reach of right hand. The whole transmission is enclosed in an oil-tight case and runs in oil bath.

The Springs are of flexible, half elliptic type, giving exceedingly easy riding qualities. Length, 36 inches front, 48 inches rear.

The Ignition consists of four unit coils operated by dry cells, storage battery or magneto. The commutator is very accurate in its action and is instantly accessible—**accessibility of parts being a feature of this car.** The spark plugs are easily examined and connections quickly and positively made.

The Axles are fitted with Timken Roller Bearings throughout, and are made sufficiently heavy to withstand hard usage. **The rear axle is fitted with bevel gear drive, eliminating chain trouble.**

The Wheels are 32 inch, equipped with 3½-inch pneumatic tires. Four-inch tires for unusual or extraordinary service can be had on special order.



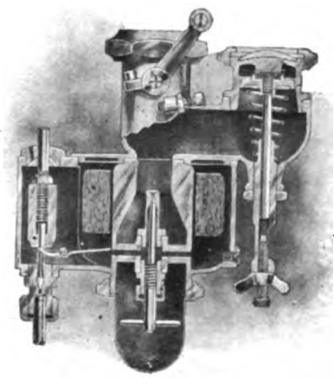
Cross Section of Rear Hub Brake

The Brakes. Each rear wheel is fitted with an effective toggle joint brake, which is absolutely positive in action, the large friction surface insuring a brake that brakes. Transmission brake is operated by foot lever.

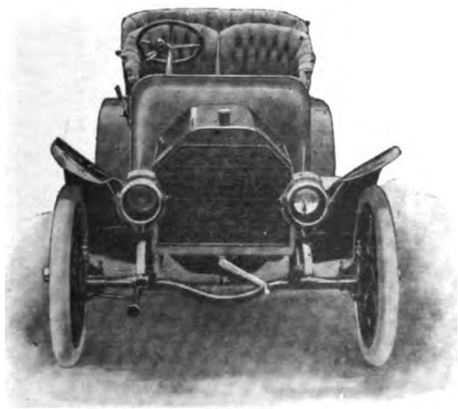
The Steering Gear is of the "worm and nut" type, controlled by 16-inch wheel placed in very comfortable position. Spark and throttle control levers are located just below the wheel on right-hand side of the post. In addition to the regular throttle an accelerator pedal is provided, whereby speed may be momentarily increased.

The Carburetor is of the most efficient and best type. Particular attention has been given to this most important part of an automobile power equipment. Our new and improved carburetor, has several distinctive features; for instance, the gasoline nozzle instead of being placed in a mixing chamber by itself, runs up through the center of the float chamber. An auxiliary air inlet is also provided, which insures the maintenance of a perfect mixture. The result is a large decrease in fuel consumption and increased power.

The Water Circulation is by gear pump driven from crank shaft. Water is forced around water-jacket and out into the radiator mounted in front of car. Sufficient cooling surface has been provided, so that the temperature of the water is always kept well below the boiling point.



Cross Section of Carburetor



Oldsmobile Model S

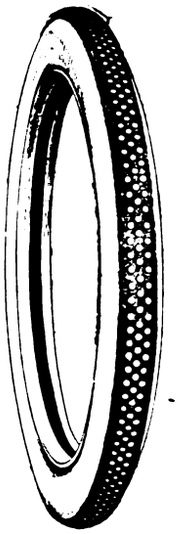
¶ Next week we will take up these and other distinguishing features of the Oldsmobile more in detail and show what they mean to you as a dealer or a buyer. Model "S" has a well-balanced, rangy exterior, distinctive and irresistably attractive. It has the equally well-balanced internal construction. It's the car that commands your attention on sight and holds your interest on demonstration. Orders are now being entered for these cars.

OLDS MOTOR WORKS

LANSING, MICH, U. S. A.

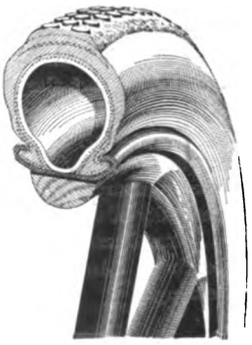
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MICHELIN



The new MICHELIN ANTI-SKID TIRE adopted by all as the most perfected non-slipping, non-skidding and resilient.

WHAT A PLEASED CUSTOMER SAYS:



Mr. E. D. WINANS, 646 Jefferson Ave., Detroit, Mich.
Michelin Tire Co., New York.

Dear Sir:—The new Michelin Anti-Skid Tires are giving utmost satisfaction. They possess the resiliency and speed of pneumatics with non-slipping advantage.

Very truly,
GEO. L. FLEITZ.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

6 West 29th Street, New York

Telephone—4657 Madison E D WINANS, General Manager

BRANCHES

Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
Philadelphia, 322 No. Broad Street.
Washington, 1330 New York Ave., N. W.
San Francisco, 307 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street.
Pittsburg, 5903 Centre Avenue.
Utica, 12-18 Lafayette Street
Poughkeepsie, 14-20 Catherine Street.
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
Asbury Park, N. J., Main St. and Sewall Avenue
Morristown N. J., 1 South Street.

THINK IT OVER

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

Harry K. Morris

Alfred Wilmarth

Morris & Wilmarth,
Stock, Grain, Cotton and Coffee,
32 Broadway,
New York, July 22nd 1906

MEMBERS
NEW YORK STOCK EXCHANGE
NEW YORK COFFEE EXCHANGE
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TELEPHONE 2338 BROAD

PRIVATE WIRES TO
CHICAGO AND MILWAUKEE

BRANCH OFFICES
128 BROADWAY, N.Y.
181 MONTAGUE ST. BKLYN.
134 SO. 4TH ST. PHILA., PENN.

Mr. C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

Dict.

H. S. M. - G.

ALL SIZES CARRIED IN STOCK

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request

CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 38th St., New York.
218 & 320 N. Broad St., Philadelphia, Pa.
202 & 204 Columbus Ave., Boston, Mass.
405 Erie St., Cleveland, Ohio

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Parts for 1906 Automobiles:

For the convenience and assistance of automobile builders we have prepared complete drawings of our 1906 model pressed steel frames and frame members, and other parts, which will be mailed upon application. We are prepared to build pressed steel frames, change gears, front and rear axles and other parts in any quantity for early delivery.

STEEL STAMPINGS:

We make a specialty of steel stampings of all descriptions, including hubs, parts, brake drums, etc.

STEERING WHEELS:

Another specialty of ours—we make the best steering wheel rim on the market, and a large variety of spiders for application to any steering column.

Send for our Steering Wheel circular

A. O. SMITH COMPANY

Milwaukee, Wisconsin.

THE

UTILITY AND PRACTICABILITY

of the



HILL LOCK VALVE

has induced the

Leading Foreign and Domestic Manufacturers

to supply it as a part of

THEIR REGULAR EQUIPMENT

They appreciate that such a device that locks the gasolene supply against thieves and meddlers is insurance of a sort worth providing.

E. HILL, Jr.,

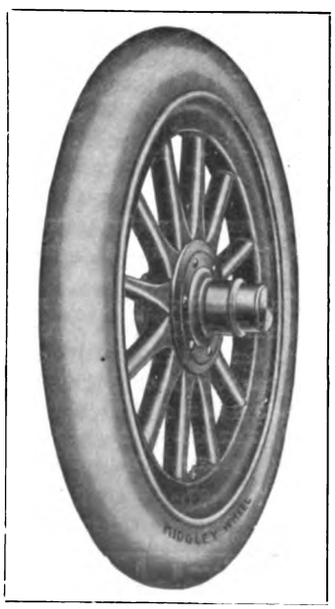
Norwalk Iron Works Co., SOUTH NORWALK, CONN.



A DOCTOR'S OPINION

MILWAUKEE, WIS.

"I am so well pleased with the tubular steel wheels made by you for my old Winton that I feel under obligation to express to you my satisfaction with them, and I desire further to compliment your machining of the hubs to fit the new steering knuckles furnished by The Winton Manufacturing Company.



"My machine is now thoroughly over-hauled and repainted, and I was so surprised to see how much the general appearance of the car was improved by your artillery wheels that I thought I would throw you a bouquet and let you join with me in a feeling of complete satisfaction."

Very truly yours,

Chas. H. Lemon.

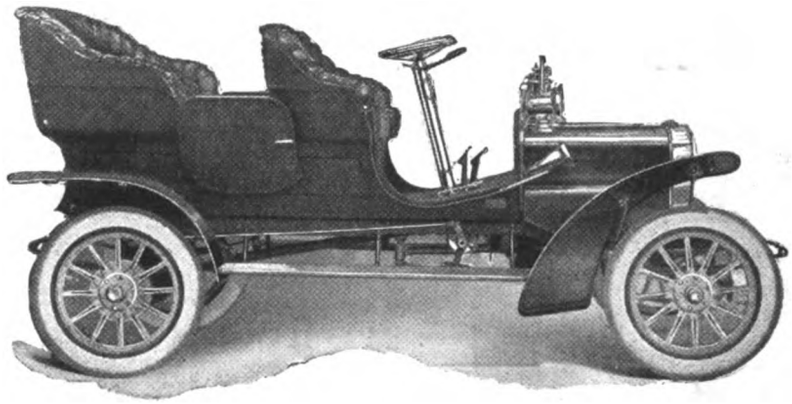
THE MIDGLEY MFG. CO., Columbus, Ohio

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NO NOISE BONE-RACKING BELTS CHAINS PULLEYS GASKETS TRUSS RODS STRUT ROOS GO WITH THE NORTHERN

ITS SILENCE AND SIMPLICITY ARE ON A PAR WITH ITS EASY RIDING QUALITIES. IT IS A COMFORTABLE CAR AS WELL AS A DEPENDABLE ONE.

Detachable Side Entrance Tonneaus Supplied if Desired.



No Delays. Immediate Deliveries Guaranteed.

NORTHERN MANUFACTURING COMPANY, Detroit, Mich.

Member A. L. A. M.

PETER FOGARTY, New York Agent, 142 West Thirty-eighth Street.

The Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car $1450

8 H. P. Tourabout $780

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.

TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in principal cities.

New York Agents: MAXWELL-BRISCOE, INC.

Foreign Representatives (except Canada and Mexico), RICHARD IRVIN & CO., 25 Broad St., New York City.

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This AUTO TIRE is Both DURABLE and LIVELY

When you buy an *ordinary* Auto Tire, you have to decide a difficult question.

Is it best to get a hard, inflexible tire, which will rack your bones and soon put your car out of business, but which will *last a season or more*.

Or—

To get a soft, resilient, easy riding tire, which will go to pieces in a short time because it won't stand the wear and tear of the road?

Momentous question.

And either way you answer it— you lose.

Because if you decide on the *hard* tire, it means breakdowns on the road, and consequently liberal use of a farmer's team. It means constant repairs to your engine, a car always in the shop. Your own aching joints are thrown in for good measure.

And if you select the *soft* tire, it means punctures, tire explosions and tire troubles generally. And you have to buy new tires every little while.

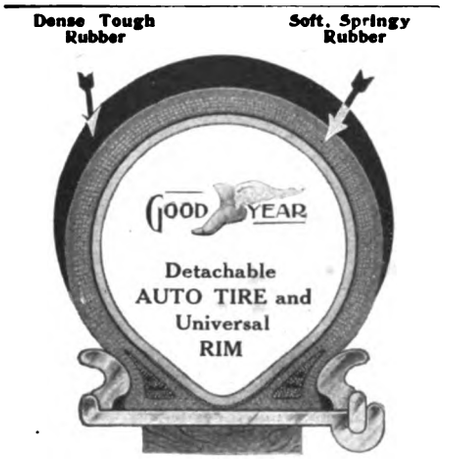
It's Money,—Money—Money, either way.

You'll envy Rockefeller before you get through.

Now you can *dodge* this momentous question if you will.

Because the Goodyear Detachable Auto Tire has all the GOOD points of both the *hard* and the *soft* tire with the bad features of neither.

It's easy for anyone to understand WHY this is true. Read carefully, and see for yourself.



First, look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it. It's what the *hard* tire is made from.

Now right underneath this is the remainder of the outer tube (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be. It's the same as the seldom-used *soft* tire.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it, if you doubt.

The soft rubber portion is strengthened by having our *special fabric* vulcanized into it. This fabric is not the hard, inflexible sail cloth used in ordinary tires, but is woven like basket work, or an open work stocking, and *gives* back and forth under pressure, and allows the elasticity of the rubber full play.

The dense rubber, the soft rubber and the special fabric together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, **Grove Street, Akron, Ohio.**

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.: St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St.; and Detroit, 242 Jefferson Ave.

THE STANDARD AMERICAN COOLER.

THE WHITLOCK COOLER

was used on the

LOCOMOBILE RACER that finished THIRD

in the

VANDERBILT CUP RACE.

It was never touched during the race. It did its full duty.

It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Races, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance.

We make coolers of the HIGHEST EFFICIENCY.

The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905, 1906.

THE WHITLOOK COIL PIPE COMPANY,
HARTFORD, CONN.

WHY PREMIER CARS

Appeal to All Classes.

TO THE PROFESSIONAL MAN—Because of its simplicity.

TO THE BUSINESS MAN—Because of its readiness to go at all times.

TO THE REPAIR MAN—Because of its perfect accessibility to working parts.

TO ALL MEN—Because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5000 recorded miles—is only a trifle over one cent per mile for the car—or 1-5th to 1-4 cent per mile per passenger—total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

"The air cooled season never ends."

Side Entrance Model - $1500 Runabout - $1250
Our new (1906) Doctor's Special, $1425 Light Truck, $1400

PREMIER MOTOR MFG. CO., No. 212 Shelby Street, Indianapolis, Ind.

Members American Motor Car Manufacturers Association.

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Rambler

The Car of Steady Service.

The pleasures of an automobile are in direct ratio to the serviceability of the car.

This spells RAMBLER to experienced users.

It is a car of steady day after day service that you do not have to "nurse" over every bit of bad road to prevent break-downs.

It has abundant power and is built to stand the strains of that power and the hard usage resulting from the operator's confidence in its ability to go, and keep on going, to the end of the road—and then come home again.

If this, in connection with elegant appearance and a price, low in proportion to its high qualities, appeals to you, call and ask for a thorough and convincing demonstration. Representatives in all leading cities.

Surrey, Type One, a five passenger, medium weight, touring car, ready for the road with lamps, horn and full equipment of tools, etc., $1200.

Cape top, or canopy top with glass front, $100 extra.

Surrey, Type Two, a five passenger touring car of more elaborate design with double chain drive, full canopy top and glass front, $1650.

THOMAS B. JEFFERY & COMPANY,
Kenosha, Wis.

BRANCHES:
CHICAGO, BOSTON,
MILWAUKEE, PHILADELPHIA,
SAN FRANCISCO.

New York Agency,
134 West 38th St.
REPRESENTATIVES IN ALL LEADING CITIES.

Catalogue and Rambler Magazine sent upon request.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, November 9, 1905. No. 7

CONSOLIDATED CRIES QUITS

Finds Bicycles More Profitable than Autos and Acts Accordingly—Yale Car Abandoned.

The Consolidated Mfg. Co., Toledo, Ohio, makers of the Yale car, have quit—that is, quit the business of automobile manufacture. They will, however, continue the production of bicycles, which was their original business.

To the general public this will prove in the nature of sensational news, although those "in the know" long have been aware that the Yale car had not proven a profit payer. Strenuous efforts were made by the heads of the company to turn the tide, but to no purpose.

Not even the radical reorganization effected several months since proved of avail; in fact, it proved the beginning of the end. Several big railroad men who bought into the company at the time took the bull by the horns and had an expert go deep into the concern's affairs. He reported that while the bicycle department had proved profitable, the automobile end of the business had lost money from the beginning. To mend matters, the expert said at least $500,000 would be necessary.

The report was sufficient for the interested people. They immediately ordered the ringing down of the curtain. The automobile department was promptly shut down and has ceased to exist. If the stock and machinery on hand can be disposed of, it will be sold to the best advantage, but whether or no, the Consolidated Mfg. Co. is through with automobiles. A Buffalo manufacturer made a bid for the property, but the deal fell through when it seemed on the point of consummation. Another manufacturer also made an offer for the concern's Selden license, but nothing came of it.

Cadillac Buys Metzger's Business.

W. E. Metzger, who in addition to being general sales manager of the Cadillac Motor Car Co., has maintained one of the most prosperous retail establishments in Detroit, Mich., has disposed of the latter to the Cadillac Co., who will continue it as a branch store. In addition to the Cadillac line, the Pope-Waverly electric will be handled.

Apperson Saves His Plant from Fire.

Fire in a wooden structure adjoining the brick plant of the Apperson Bros. Automobile Co., Kokomo, Ind., on Monday night last caused about $5,000 worth of damage, which is fully covered by insurance. The building destroyed was not an essential part of the Apperson plant and will cause no delay and small inconvenience. It was due to the quick action of Elmer Apperson, the head of the company, that the fire did not prove serious. When the flames were at their height he jumped for the steel door connecting the frame building and the brick factory, and, although he was painfully burned about the hands and arms, he succeeded in closing the door and thereby saved the plant.

Greater Cadillac Chooses Officers

At the meeting following the formal merger of the Cadillac Automobile Co. and the Leland & Faulconer Mfg. Co. into the Cadillac Motor Car Co., these officers were elected: President, Lem W. Bowen; vice-president, Clarence A. Black; secretary, Wilfred C. Leland; treasurer, William H. Murphy; general manager, Henry M. Leland.

Parish Locates in Reading.

The N. E. Parish Mfg. Co., which is shortly to begin the manufacture of nickel chrome steel frames, has secured a factory in Reading, Pa., close by the immense Carpenter Steel Works, with which it will be more rather than less intimately related. The necessary machinery is now being installed.

Olds Workers to Meet in Lansing.

The Olds branch managers, travelling salesmen and larger agents are due to gather and confer at the factory in Lansing, Mich., on the 17th and 18th inst. The new Oldsmobiles will be then uncovered for the first time and several matters of policy be discussed.

"E. V." Bonds are Extended.

The bonds of the Electric Vehicle Co., which matured November 1, have been extended. They are held chiefly by those intimately connected with the company.

Welch Adds $50,000 Capital.

An increase of $150,000 has been made in the capital stock of the Welch Motor Car Co., of Pontiac, Mich. Its capital was formerly $100,000.

OLDS TAKES UP TWO-CYCLES

Pioneer Makers Make a Surprising Departure—Four Cylinder Car also Listed.

What is easily the most surprising announcement of the season is the one officially made this week by the Olds Motor Works—that for 1906 they will manufacture and market an Oldsmobile with a two-cycle engine.

While their announcement of a four cylinder four-cycle touring car was not unexpected, the Olds people were uncommonly successful in keeping the two-cycle model under cover. It was only last week that the first reports of it leaked out and got abroad. But further than that this new car will be of two cylinders, and that it will list at $1,200, nothing more is now known of it. It replaces the two cylinder four-cycle horizontal Oldsmobile of this season, and that it will attract a lot of new interest to the two-cycle type goes without saying.

The four cylinder Oldsmobile will list at $2,250. Its engine will be positioned vertically, of course, and will be of 24-26 horsepower. The cylinders will be cast in pairs, and will be water jacketed even to the valves. Water circulation will be by gear pump. Cone clutch, shaft drive and sliding gear transmission, affording three forwards and one reverse, and operated by a single lever, will be employed. Four unit coils, operated by dry cells, storage battery or magneto, will comprise the ignition system. The 32-inch wheels, with Timken roller bearing axles, will be fitted with 3½-inch tires.

In addition to these two brand new models, the curved dash Oldsmobile runabout, at $650, will constitute the Olds line for 1906.

Nine More Obtain Membership.

By mail vote the following have been elected to membership in the Motor & Accessory Manufacturers: Gabriel Horn Mfg. Co., Cleveland, Ohio.; Gilbert Mfg. Co., New Haven, Conn.; Holley Bros., Detroit, Mich.; Belden Automobile Transmission Gear Co., Pittsburg, Pa.; Weed Chain Tire Grip Co., New York City; Lunkenheimer Co., Cincinnati, Ohio; Valentine & Co., New York City; McCord & Co., Chicago, Ill., and the Republic Rubber Co., Youngstown, Ohio.

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The Week's Incorporations.

Chicago, Ill.—Austin Auto Club, under Illinois laws; capital not given. Corporators—John J. Miller and Fred C. Rounds.

Frankfort, Ind.—Automobile Vending Co., under Indiana laws, with $10,000 capital. Corporators—Thomas E., Owen E. and Mary E. Brumbaugh.

New York City, N. Y.—Automobile Realty Co., under New York laws, with $25,000 capital. Corporators—Jacob Reitman, A. Kreitzel and L. Lewin.

Augusta, Me.—Hamilton Automobile Co., under Maine laws, with $50,000 capital. Corporators and officers—A. P. Bibber, president; W. S. Lee, treasurer.

Oswego, N. Y.—New Amsterdam Motor Co., under New York laws, with $75,000 capital. Corporators—Charles Morgan, E. F. Terry and Alfred Brotherhood.

St. Louis, Mo.—Seaton Auto Tire Co., under Missouri laws, with $150,000 capital; fully paid up. Corporators—Henry Schiel, W. F. Seaton and A. S. Doxee.

St. Louis, Mo.—Phoenix Automobile & Supply Co., under Missouri laws, with $4,000 capital. Corporators—W. Mulford, Edward Holmes and Freeman Wright.

Brooklyn, N. Y.—Prospect Construction Co., under New York laws, with $6,000 capital; to conduct garage. Corporators—W. C. Damron, H. B. Hill and J. W. F. Ehlers.

La Crosse, Wis.—The Auto Rapid Transit Co., under Wisconsin laws, with $25,000 capital. Corporators—A. J. Stephenson, W. J. Brayton and Philip McMahon.

Utica, N. Y.—Consolidated Motor Car Co., under New York laws, with $25,000 capital; to deal in automobiles. Corporators—F. P. Miller, H. H. Mundy and G. H. Harris.

Moline, Ill.—Deere-Clark Motor Car Co., under Illinois laws, with $100,000 capital; to make motor vehicles. Corporators—C. F. Drury, R. S. Blakemore and W. E. Clark.

Williamsport, Pa.—Williamsport Automobile Exchange, under Pennsylvania laws, with $10,000 capital; to deal in automobiles. Corporators—H. A. Bubb and B. Bubb, Jr.

Chicago, Ill.—Keeley-Hunter Co., under Illinois laws, with $15,000 capital; to manufacture automobiles. Corporators—Gordon L. Gray, George P. Rowell and Henry A. Ritter.

New York City, N. Y.—Adams Vehicle Co., under New York laws, with $5,000 capital; to make and sell all kinds of vehicles. Corporators—L. C. Weir, B. W. Rowe and H. H. Gates.

Chicago, Ill.—Biddle-Murray Mfg. Co., under Illinois laws, with $10,000 capital; to manufacture automobiles. Corporators—Ralph McShaw, John D. Black and Edward C. Maher.

Atlantic City, N. J.—The Atlantic Automobile Co. and Machine Works, under New Jersey laws, with $50,000 capital. Corporators—Louis H. Hopper, Frank A. Broadhead and Clarence L. Cole.

Newark, N. J.—Motor Vehicle Co., under New Jersey laws, with $5,000 capital, all paid in; to deal in automobiles. Corporators—Alfred A. Walsh, William F. Kimber and William P. Howe.

Havana, Ill.—McFadden Mfg. Co., to manufacture gas engines of every description; capital, $24,000. Corporators—G. C. and B. L. McFadden, John W. Watts, J. H. Harvey and George Fish.

Malden, Mass.—United Automatic Supply Co., under Massachusetts laws, with $40,000 capital; to deal in automobiles. Corporators and officers—H. C. Prescott, president; F. M. Prescott, treasurer.

Jersey City, N. J.—Bergen and West Side Automobile Club, under New Jersey laws, with $9,000 capital; to conduct garage. Corporators—Walter G. Russell, Albert Levly and Winifred Green.

Akron, Ohio.—The Andrews Automobile Clutch Co., under Ohio laws, with $10,000 capital. Corporators: Will Christy, C. B. Raymond, E. E. Andrews, L. C. Miles and C. C. Goodrich; $10,000.

Battle Creek, Mich.—The American Motor & Cycle Co., under Michigan laws, with $10,000 capital; to deal in automobiles. Corporators—C. G. Currie, F. Jay Rathbun and Charles E. Moore.

Boston, Mass.—Eco Mfg. Co., under Massachusetts laws, with $10,000 capital; to make and deal in generators and lamps. Corporators and officers—R. P. Elliott, president; J. S. Pishon, treasurer.

Columbus, Ohio.—The Ohio Garage & Repair Co., under Ohio laws, with $10,000 capital; to conduct general garage business. Corporators—G. W. Hale, J. O. Lundy, E. F. Gibbons, H. D. Merrick and I. D. Hogg.

Grand Rapids, Mich.—The Michigan Motor Co., under Michigan laws, with $150,000 capital; to make gasolene engines, clutches and accessories. Corporators—Fred L. Perkins, Harry J. Perkins, Charles E. Perkins and A. C. Hinchman.

New York City, N. Y.—Auto Auction Association of America, under New York laws, with $5,000 capital; to auction automobiles. Corporators—Charles Shongood, Lindsay Russell, Charles G. Wridgeway, Walter E. Coe and Robert J. Mooney.

Royal Gets Its License.

After the meeting of the Association of Licensed Automobile Manufacturers last week, it was officially announced that a Selden license has been granted to the Royal Motor Car Co., Cleveland, Ohio. The news that such action was likely was published exclusively in the Motor World several weeks since, and proved one of the trade surprises of the time. At the same meeting of the A. L. A. M. the license of the Worthington Automobile Co. was cancelled.

Kelsey Goes to Tarrytown.

C. W. Kelsey, formerly manager of the Kelsey Motor Co., of Philadelphia, has been transferred to Tarrytown, N. Y., as sales agent of the Maxwell-Briscoe Motor Co. William N. David, of Bridgeport, Pa., has assumed charge of the Philadelphia branch.

In the Retail World.

The Holmes-Schmidt Co., Chicago, Ill., has taken on the Glide and Maxwell cars for 1906. These will be handled in addition to the Welch.

Fank Linscott and H. Frederick contemplate building a garage at Belvidere, Ill. It will be located at the corner of South Main and Meadow streets.

The Ford Motor Co. has opened a New England branch at 147 Columbus avenue, Boston. Charles E. Fay, former assistant manager of the Winton Motor Carriage Co., is in charge of it.

The Motor Vehicle Co. has been formed at Newark, N. J., with William F. Kimber president and Alfred A. Walsh treasurer and general maanger. They have leased the store at 518 Broad street, and will handle Maxwell cars.

The Highland Automobile Co., of Pittsburg, Pa., has purchased a lot 100x150 feet on the north side of Centre avenue, near South Negley avenue, for $15,500. On it they will build a two story brick garage, costing about $30,000.

The Fisk Rubber Co.'s Boston branch has been removed to 239 Columbus avenue, the store formerly occupied by the Oldsmobile Co., and almost directly opposite its former location. Necessity for larger quarters required the removal.

The four story and basement garage at 215-17 West Forty-eighth street, New York City, has been leased for a term of years by the Viqueot Co. It will be used as salesrooms, repair shop and garage for the Viqueot gasolene car.

The new Foss-Hughes Motor Car Co., organized to handle the Pierce, Cadillac and Baker cars in Philadelphia, have located at 201 North Broad street; the store is within three blocks of the City Hall, and is one of the most favorably located in the city.

The American Motor and Cycle Co., which has just incorporated at Battle Creek, Mich., has taken over the business of the Currie Motor and Cycle Co. and the Losey-O'Reilly Co., and will conduct a general sales agency and garage business in the building heretofore occupied by the latter named firm at 35 East Main street. C. G. Currie, of the old Motor and Cycle Co., is president of the new concern, F. Jay Rathbun secretary and Charles E. Moore treasurer.

As the outgrowth of the Miller-Mundy Motor Ccar Co., the Consolidated Motor Car Co., of Utica, N. Y., has been organized, to sell automobiles and accessories and conduct a general automobile business. A commodious garage will be erected next spring, but the site has not yet been chosen. The cars handled will include the Pierce, Pope-Toledo, Stevens-Duryea, Winton, Cadillac and Pope-Waverly. At the election last week these officers were chosen: President, Francis P. Miller; vice-president, Edward Otis; secretary, Harry M. Mundy; treasurer, C. Harrison Norris.

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WILL LIMIT LOCAL SHOWS

N. A. A. M. Decides to Restrict Sanctions and Explains How it Won't "Butt Into" Sport.

During 1906 there will be local shows only in those cities in which shows were held during the last year.

This was decided at the meeting of the executive committee of the National Association of Automobile Manufacturers at their regular monthly meeting in New York on Thursday last, 4th inst.

The association will not grant sanction for shows to be held in any other cities, and thus nips in the bud any aims and ambition to enlarge the annual "circuit." The N. A. A. M. considers that there are more than enough as it is, and that there is no necessity or demand, crying or otherwise, for any more. And such shows as will be sanctioned will obtain approval only on condition that the proceeds shall go to local organizations of dealers. It is further provided (1) that these organizations must not be "close corporations," but must admit to membership on an equal basis all reputable dealers who have been engaged in business for one year or more, and (2) that manufacturers must not be called on for financial assistance in the conduct of their exhibits.

Although it had been proposed in writing that a fine or penalty be inflicted on members of the N. A. A. M. who participated in road contests not approved by the organization, after last Thursday's meeting the manager gave out that an "erroneous impression" had been created. The manager makes this adroit explanation of the association's position in the matter: "The association does not expect to sanction such events. It will probably take into consideration the details of such as may be proposed and make a recommendation to its members. It will, of course, be glad to receive details of such contests as may be proposed."

Devlin Takes Possession of Acme.

The sale of the Acme Motor Car Co., Reading, Pa., to Frank A. Devlin, of Chicago, which has been pending for several months, finally has been consummated, and the new owner is now in full posession of both the plant and real estate. The purchase price is said to have been $250,000. While the production of touring cars will be continued, much attention will be now centred in delivery wagons and commercial vehicles generally. I. D. Lengel will remain as manager under the new ownership.

How Chicago is Oversold.

The N. A. A. M. will "have a time of it" in providing space at the Chicago show for all who wish to display cars. Up to Thursday last there were eighty-seven applicants who desire to exhibit 368 cars, and ask for 224 spaces aggregating 62,845 feet. As the number of spaces available is but 131, equal to 39,497 feet, the amount of pruning that will have to be done is evident. It was hoped to provide room for the overflow by erecting a temporary gallery in the Coliseum, but the Chicago Buildings Department vetoed the idea.

Preparing to Test Metals.

The experimental and test committee of the Licensed Association of Automobile Manufacturers are due to meet in Hartford on Friday at the laboratory of Henry Souther and will also visit the plants of the Electric Vehicle Co. and the Pope Manufacturing Co. Besides Mr. Souther the members of the committee are Messrs. Maxim, of the Electric Vehicle Co.; Wilkinson, of the H. H. Franklin Mfg. Co., of Syracuse, N. Y.; Huff, of the Packard Motor Car Co., of Detriot; Coffin, of the Olds Motor Works, of Lansing, Mich., and King, of the Northern Automobile Co., of Detroit.

The meeting will decide on the equipment necessary for the physical and chemical tests which will be conducted by the A. L. A. M.'s new testing department. In this connection it is stated that the Bethlehem Steel Co. has notified the association that it would send a metallurgist to Europe to study the material supplied to the constructors of the best makes of automobiles abroad, and would co-operate with the A. L. A. M. in every way possible.

Bankrupt Files its Schedule.

Paul E. Miller has been named as trustee for the bankrupt Western Auto Supply Co., of Milwaukee, Wis. His bond is fixed at $3,000. In the schedule filed by the bankrupt concern liabilities were given as $5,071.79, with assets of $7,163.83, of which $4,000, however, was the estimated value of the company's machinery. George E. Fisher, Henry Pritzlaff and Peter Cooper were appointed to act as appraisers of the property.

Parts Company Will Produce Cars.

Although it has been making automobile parts in a small way for some time, the Muncie Auto Parts Co., of Muncie, Ind., which was incorporated two weeks since, is ambitious, and intends to place a car on the market as soon as its factory is ready. Hugh L. Warner, the superintendent of the plant, has completed a working model of the car the company intends to manufacture.

Gaylor Back in Harness.

L. B. Gaylor, former manager of the Waltham Mfg. Co., has returned to the service of that company. His long absentation was necessitated by his health, which has been restored.

Winton Goes Abroad.

Alexander Winton sailed for Europe this week for a vacation trip in which will be included a visit to the Paris show in December.

TACKLES SECOND-HAND PROBLEM

Licensed Manufacturers in a "Touring Company" Which has Plans for Disposal of Used Cars.

What appears tangible evidence that the Association of Licensed Automobile Manufacturers has undertaken to grapple seriously with the vexing secondhand problem was unearthed yesterday in the guise of the Inter-State Automobile Touring Co., of No. 5 East 42d street, New York.

No. 5 is a part of No. 7 at that address and No. 7 is the address of the A. L. A. M. itself, in other words, No. 5 and No. 7 East 42d street are one and the same building. This was clue No. 1. It led directly to clue No. 2—that the Inter-State Co. is at present a partnership composed of W. E. Metzger, G. H. Stilwell and C. A. Wardle. Later it may become a corporation. It so happens that Mr. Stilwell is of the H. H. Franklin Mfg. Co., Syracuse, N. Y., and Mr. Metzger of the Cadillac Motor Car Co., Detriot, Mich. Wardle is the chief "sleuth" or roying representative of the Licensed Manufacturers.

Whether or not the "Touring" in the title of the firm implies developments of which there are no surface indications, it can be stated that the principal purpose of the Interstate Automobile Touring Company is to provide an outlet for secondhand cars of any and all makes and with none of the odium that so often attaches to that class of trade. It will seek to bring together those sellers and buyers who are in closest proximity to each other and to assist dealers in doing that sort of thing. A registration fee of $15 will be charged for each car it is desired to offer for sale and the money will be expended in advertising such cars extensively in trade and country papers, all such cars to be vouched for by affidavit. If John Jones of Podunk is known to be in the market for a car he will be placed in touch with Sam Smith of Squedunk, who has one for sale and who is located nearest to Jones. Similarly dealers with used cars for sale and those who desire to purchase such cars will be brought together.

In short, the Inter-State Co. appears to fill a bill which the Motor World itself long ago suggested—a reputable clearing house for secondhand cars.

Whipple Heads Auction Association.

The Automobile Auction Association of America, which was incorporated last week under New York laws, with C. G. Wridgway, manager of the Peerless branch in New York, as secretary, will aim to find markets for secondhand cars and to relieve auction sales of the odium that usually attaches to them—somewhat on the order of Friswell's, in London. The fact that Harlan W. Whipple, former head of the American Automobile Association, is president of the new auction concern, will serve to commend it favorably.

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The Constructive Principle of Fisk Tires Involves

A Technique So Simple in Manipulation and So Positively Accident-Proof

that it should readily appeal to any discriminating purchaser.

Beads of a wedge shape are applied to a flat rim and held by rings which are rolled on an angle corresponding to that of the bead, so that when drawn down by clamping bolts, the bead acts as an inside cone wedge, with the result that the tire is firmly held to the rim, without air pressure or circumferential contraction.

A Tire so Locked to the Rim Incorporates a "Life Preserving Principle" and Reduces Tire Maintenance to an Economic Basis.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 784-786 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 828 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 428 So. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 254 Jefferson Ave.
ST. LOUIS, 3906 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1550 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1034 So. Main St.

CADILLAC Salability

Here's the 1905 Sales Record of one of the principal cities of the Central States (Population about 300,000):

	No. Lines Handled	Total Cars Sold
Dealer No. 1	two	12
Dealer No. 2	two	11
Dealer No. 3	four	4
Dealer No. 4	four	1
Dealer No. 5	two	2
Dealer No. 6	one	6
Dealer No. 7	one	0
Dealer No. 8	one	4
Dealer No. 9	two	0
Dealer No. 10	one	2
Dealer No. 11	two	1
Total Sales by above Dealers		43 Cars.

THE CADILLAC DEALER SOLD 51 CADILLACS

or about 15 per cent. more Cadillacs than the sales of all the other dealers combined.

There's a reason for this and it's not hard to guess it.

We're talking 1906 Business.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers.

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THE MOTOR WORLD

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NEW YORK, NOVEMBER 9, 1905.

Suppressing the Drunks.

It does no harm to rail at and to oratorically lambast the offending chauffeur as was done by President Morris of the Automobile Club of America in his address to the New York Y. M. C. A., but it well may be doubted that it does any good. It will require something more than tongue lashing to bring about reform in the young man's manners.

That three-fourths of the serious accidents are due to the antics of the hired men, and that their antics are due to wine or women, usually both, are alike almost beyond doubt. But, as was the case in the slightly veiled personal instance recited by Mr. Morris, the owners of the cars in surreptitious use by recalcitrant chauffeurs are content merely to discharge the offenders, who simply "flit from job to job," with apparently no idea of culpability or responsibility.

The number of accidents growing out of the midnight carousing of chauffeurs has, if anything, increased rather than diminished since the law of New York State provided what was hoped would prove a check on the frisky young persons. No owner has arisen to invoke the aid of that law, which inflicts a penalty for the use of a car without the owner's permission. Even when a car paid for by the city of New York and used by a city official was wrecked by its drunken driver returning from a midnight spree with two women companions he escaped with a $5 fine. Only last Sunday night we saw one of his kind guiding a car with one hand while the other arm was around the waist of a snip of a girl. The only occasion when a serious effort was made to put one of the most flagrant of these offenders in jail "influence" was brought to bear on the court, and the man was summarily dismissed before the prosecutors had opportunity even to offer their evidence.

While this sort of thing continues—while owners remain lenient and courts remain complaisant, there is no hope for a better ordered state of affairs. Chauffeurs will continue to use their employers' cars in which to disport their "lady friends" after dark; whiskey will continue to go to their heads, and saddening accidents will continue to occur. It matters little that most of the chief physical sufferers have been themselves the offenders, for in saving the drunken driver from himself the innocent public also is saved.

Not merely discharge from employment, but a stiff dose of jail is the only cure for such drunks, and until a few owners arise and make use of the weapon which the law places in their hands no abatement of accident is possible or is to be expected.

Concerning Price Cutting.

One of the most vicious practices which is to be found in any trade is that of miscellaneous price cutting by the retailers without the knowledge or express consent of the manufacturers. To the retailer it may at times be of greater or less benefit in the way of advertising, or as a means of disposing of the residue of a season's stock in trade, to adopt the bargain counter policy, and, of course, there are occasions when a special "job" or bankrupt stock can best be got rid of by such a method. In any case the inevitable result must be that the further salability of that line at its former price is put out of the question for all time.

Despite the most strenuous efforts on the part of manufacturers' and dealers' associations, this practice still continues to a greater or less extent, and frequently enough the maker is brought face to face with the question, "How can it be stopped?" That summary dealing cannot fail to accomplish something in the right direction goes without saying, provided, of course, that the penalty be severe enough to make its permanent mark upon the offender.

A single manufacturer of parts in Great Britain has undertaken something of that nature by the establishment of a blacklist. A retailer of the bastard type who had been advertising his goods at rates which did not permit of legitimate profit under any circumstances may now seek elsewhere for his stock, for henceforth he will gain no recognition from the offended maker. It is conceivable that, taken in an isolated case of the sort in question, the maker and not the dealer might lose in the long run. But were all allied makers to combine to adopt the same policy the downfall of the charlatan would be quite as speedy as certain.

Eliminating the Clutch.

Alluring as are the possibilities offered by a generator-motor set as a flexible and infinitely variable means of transmitting the power to the rear axle and numerous as the attempts have been to adopt it to the car, little or no practical result appears to have been forthcoming. So far as efficiency is concerned it presents no great disadvantages as the majority of systems evolved thus far have all provided a means of direct driving on what corresponds to the high gear, so that in this, which is in use nine-tenths of the time, it is equivalent to the mechanical form. On intermediate and low speeds its efficiency is not alone relatively high but, being infinitely variable as to speed range the power of the motor may be utilized to better advantage than when the speed is of necessity confined to a few changes.

This refers more particularly to those systems of electrical drive, in which the storage battery does not enter in any way as a component part. When the current is accumulated as energy in chemical form and again given off as required, the loss is, of course, greater, and the percentage of efficiency correspondingly lower than when electricity is merely depended upon to form a link in the transmission. In such cases it not only displaces the change speed gear—a weak spot in the motive power of the average car—but eliminates the clutch as well. Many of the forms proposed have contained most ingenious combinations, and it is noticeable that a number have been made the subject of patents, although with probably a single exception, none have ever reached the market, and doubtless very few have progressed beyond the draughting board. That the idea

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is one that appeals very strongly to inventors on both sides of the Atlantic is apparent from its frequent recurrence in some form or other in the patent records.

Apart from its transmission, cars embodying this feature do not differ in any other way, and, so far as outside appearances go, look quite the same. The location and detail of the motive power are identical, the four cylinder vertical engine being given the preference owing to its even balance. In place of the clutch a multipolar generator of practically the same diameter as the part it displaces is coupled directly to the end of the main shaft. On this point all the systems thus far proposed are in accord; the source of energy and the manner of its generation vary but little, even in detail. The next essential is the electric motor, and in the earliest system of the kind exploited this was placed directly in line with and but a few inches behind the generator, but was in no way mechanically connected with it. The plan of arrangement adopted in this instance has been followed in many that have followed it, and may well be said to offer the acme of simplicity—the change speed gear box simply being displaced by an electrical motor, all other parts of the mechanism remaining the same.

But later systems have taken account of the fact that the electric motor may at some time or other succumb to the force of circumstances, and have accordingly provided a mechanical means of effecting the drive with both generator and motor running dead. Except in such cases of emergency the current is depended upon entirely, and some of the combinations upon which patents have been granted are sufficiently ingenious to warrant further investigation of their merits in practise.

In place of the usual change gear levers and clutch pedal an electric controller is substituted, supplemented, of course, by the usual provision in the shape of throttle and and ignition levers for controlling the motor. By means of this, and a bank of resistances, a wide range of speed is afforded, with, in some cases, a mechanical direct through drive on the highest. In addition to providing a number of stops by means of resistance the controller also makes it possible to effect various combinations directly between the generator and motor, such as throwing their filled windings in series or parallel, raising or lowering the voltage through the filled resistance of the generator, and similar means of obtaining reduced speed without the necessity of dissipating any considerable percentage of the electrical energy developed. From the motor the transmission is by means of the regulation cardan shaft and live axle.

Other systems have been even more ambitious in the elimination of the mechanical devices now commonly used for conveying the power from the motor to the road wheels, and have, by the addition of another motor and a plan of arrangement by which each is located at and directly coupled to its driving wheel, succeeded in doing away with everything from the clutch to the differential, even including the live axle. But this, of course, precludes the possibility of using any mechanical connection in cases of emergency, as provided for in the system employing a single motor in place of the change speed gear box. The factor of reliability is, however, one of the very strong points of the electric motor, so that the value of the mechanical standby is somewhat overrated. But, on the other hand, it provides a through drive on the high speed, which permits of attaining a rate of travel far in excess of the capacity of the generator and motor to stand for any length of time, as the latter run idly under such conditions.

Later developments of this class have usually included a set of accumulators, either as a reserve or for starting purposes, or, as a step in the transition of the power from mechanical to electrical and back again, in which case they are but replicas of those already in use.

Improvement of Bodies.

In view of the present luxuriousness of design and finish lavished upon the up-to-date automobile body, it is interesting to look back a few years at the crudity from which it has been evolved. It was not until the carriage builder awoke to the possibilities of the car as a field for future expansion that the matter of body design came in for any attention at the hands of those skilled in the art. In its inception the motor car literally represented its title of horseless carriage, for it was a runabout or buggy sans shafts, equipped with a gasolene engine carefully concealed, with a view to disturbing its original outlines as little as possible.

Two or three years were required in this country to fully demonstrate the fact that more than the elimination of the animal power and the substitution of the mechanical was necessary to arrive at the successful motor driven vehicle. On the Continent, the buggy, with its towering wheels, was quickly discarded. Its total unfitness for the purpose and the impossibility of adapting it to the new means of locomotion were promptly recognized. Its height, overwide tread and utterly inadequate wheel base shortly made themselves felt, and the result has been the evolution of a type hitherto unknown.

In France, as in other countries, the high-wheeled buggy was the forerunner of the present day type. But it very soon gave way, and such builders as the Panhard and similar concerns early took the lead with the dogcart type, having the vertical motor located under the bonnet, and with the driving wheels considerably larger than the forward pair. This marked a great advance, although its short wheel base was not recognized as its greatest drawback at the time; nevertheless, in its day, this not only represented the acme of modern design, but formed the prototype of its successors which have come down to the present greatly improved in many ways and luxurious, beyond the wildest dreams of a few years ago, but still on exactly the same general lines as the dumpy little rear entrance dogcart models.

How little this crude original has been departed from, however, and how well adapted were its lines for the unusual exigencies of the then new art of motor propulsion may be realized when it is stated that the relegation of its hearse-like rear entrance to oblivion is the only fundamental change that has been wrought in its design.

Nor are these dog carts utterly a thing of the past by any means, for there are several in continual use about the streets of New-York at the present day. They do not look modern to the initiated eye by several years, but to those that are unfamiliar with the course of development in that time they are not such an incongruous sight as are some American models of but a year or two back.

They were of course the product of the same factory that built everything pertaining to them except the tires, for at first the carriage builder was in a quandry as to where to begin. No two cars were alike, and their dimensions differed as radically as their appearance, so that it is hardly to be wondered at that this field did not appeal very strongly to the manufacturer who had hitherto devoted his entire time and attention to horse-drawn vehicles. It is hardly necessary to comment on the revolutionary change that has been brought about in the mean time; its effect on the appearance and comfort of the car are everywhere apparent, the carriage maker is now very much of a factor in the construction of the completed vehicle.

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ECONOMY TEST IS ENDED

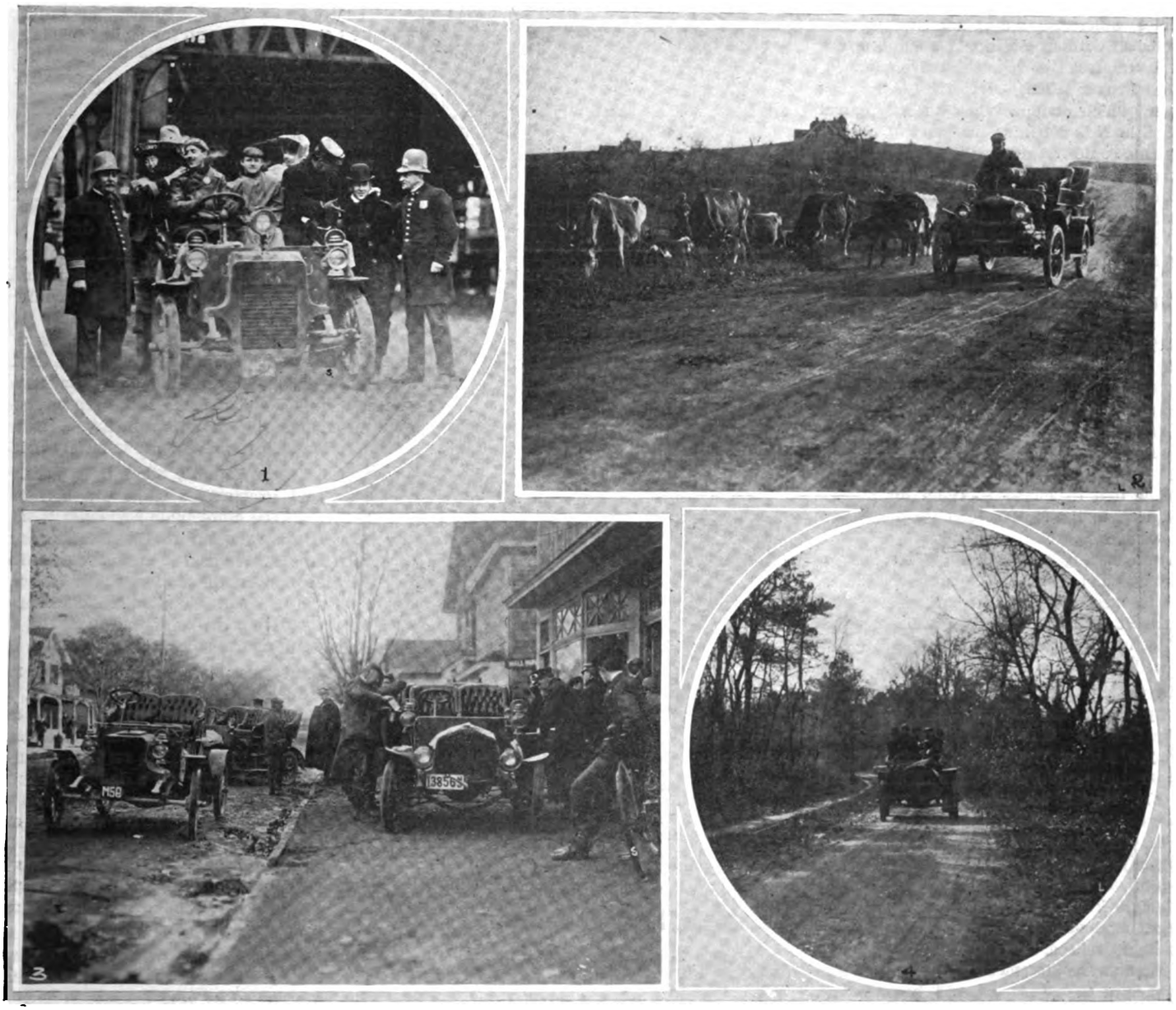
But Only Approximate Results Are Known—They Put Railroad Rates to Blush.

Although the so-called national economy test promoted by the New York Motor Club was completed last Saturday night, detailed figures of the results are still lacking, and will not be made public until about Saturday of this week. Such statistics as have been published are merely "rough figures." It is safe to say, however, that honors will be easy and "winners" numerous. Seven out of nine cars finished the test, and if the original plan of division into several classes is adhered to, there should be awards for practically all contestants.

Not unnaturally, the 16-horsepower Reo bus, with its capacity of ten passengers, made the best per capita showing, completing the 682 miles at a total cost per passenger of $2.93, as compared with the railroad fare for the same distance of $14.53 per passenger. The 20-horsepower Marmon, the least economical of the survivors, made the trip at a per capita cost of $4.586.

The test started last Monday, 30th ult., and, as told in last week's Motor World, the first three days' run comprised a round trip to Philadelphia and to Albany. Thursday's journey, from Albany back to New York, was made without incident. The Marmon car made the 150 miles trip in the best time, 8:38, enced tire troubles. The Compound, C. P. time, with 9:35. Two of the cars experienced tire troubles. The compound, C. P. Hatch, driver, had to replace an inner tube, while the Wayne was charged 12½ cents for repairing a slight puncture. The cost per passenger for the day's run was announced as follows: A. L. Kull (Wayne), 30.4 cents; A. Largensen (Marmon), 35.4 cents; C. C. Singer (Reo), 41.4 cents; F. Monroe (Olds), 41.4 cents; E. H. Hatch (Compound), 48.5 cents; F. C. Carter (Compound), 59.9 cents, and R. L. Lockwood (Reo bus), 68.6 cents. In the total test for five days the standing of the cars follows: 1, Reo runabout; 2, Reo bus; 3, Compound (Carter); 4, Compound (Hatch); 5, Marmon; 6, Oldsmobile; 7, Wayne.

On the trip to Albany the previous day the hard luck of D. T. Graham, who drove one of the Compounds, pursued him. The Compound had broken an axle sleeve on the first



1. THE REO BUS THE VICTIM OF A PHOTOGRAPHIC ARREST.
2. AN "EXCITING" INCIDENT OF THE ECONOMY TEST.
3. "FILLING UP" AT SOUTHAMPTON.
4. "FILLING UP" AT SOUTHAMPTON.

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day's run to Philadelphia, but Graham had repaired it in time to start on the Albany run. It reached Cold Spring, and in going down a hill the brake refused to work. Graham drove into a ditch to avoid a collision with a team coming uphill. An axle was bent, and Graham decided to give up the fight.

Friday's and Saturday's runs comprised a journey to Southampton, L. I., and return, a total distance of 202 miles. C. P. Hatch, in the Compound, again experienced minor tire troubles, otherwise the round trip was accomplished without mishap. No figure of the cost for the last two days were given out.

The Frayer-Miller car, driven by Lee Frayer, which stripped its gear at Central Bridge, in New York, at the start of the Albany run, could not repair it in time to figure in the contest. It, however, completed the Southampton run and made an excellent showing for the 480 miles it covered. For the four days it remained in the contest only $6 worth of gasolene and 55 cents worth of oil was consumed. As it missed the Albany run it will not have a finger in the awards.

By the semi-official table reproduced below, it will be seen that the best showing was made by the 10-passenger Reo. Its total consumption of gasolene and oil during the six days cost, respectively, $16 and $3.38¾. The total costs were $29.30, averaging $2.93 per passenger, as against $14.53, the railroad fare. The Reo runabout used $8 worth of gasolene and expended 25 cents for oil—at least, that is the report—and its per capita cost was $3.38½.

In the touring car class the 15-horsepower Compound, driven by F. C. Carter, made perhaps the best showing. It carried five passengers at an average cost of $3.72½, while the Wayne, A. L. Kull driver, was a close second with $3.96.3.

The only protest lodged with the referee was by Alfred Comacho, on behalf of the Reo Motor Car Co. On the third day's run, to Albany, the observer on the Reo bus reported that on a steep hill the engine failed to pull the car, and that six of the passengers had gotten out and given it a "boost." The referee decided that each of the six should be charged for fifteen minutes' labor, and that the total should be doubled to make up for the weight lessened. This amounted to $2.25 charged against the bus. Mr. Comacho was very angry indeed, and lodged a written protest against the statement of the facts. The language of the report, he said, he especially objected to rather than the penalty imposed.

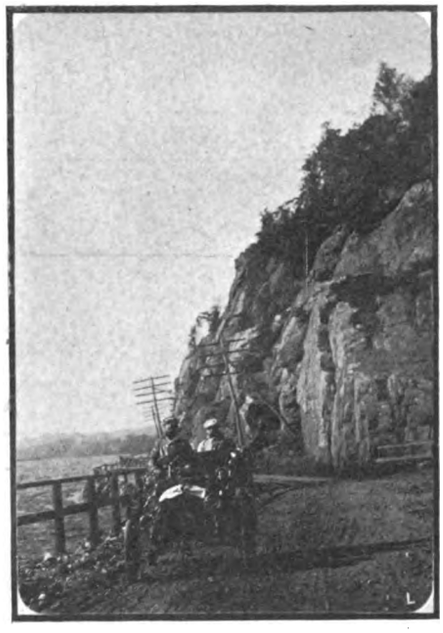
"We were on a steep, sandy hill," said he, "when our clutch failed and we started to back. Three of us jumped out, and to save life I blocked the wheels with a stone. All this time, though, our engine was running. We had had no trouble in negotiating any hill we had encountered. It was the fault of the clutch and not of the motor."

He later withdrew the protest when he found the charge of $2.25 would not cause the bus to lose the trophy.



A TRIO OF OFFICIALS.

As said before, each contestant that completed the pleasure trip ought to be well satisfied. Besides the trophy offered to the car, irrespective of class, making the most economical showing, innumerable medals are offered for finishers in the various classes, not including individual prizes and engrossed certificates, of which there are not a few.



ON THE ROAD TO ALBANY.

The subjoined table is the semi-official summary for the six days furnished the press, but in the "cost per mile" the figures do not work out uniformly:

Car.	H. P.	Driver.		Gas cost.	Oil cost.	All. costs.	Cost per pas.	Cost per mile.
Reo bus	16	R. L. Lockwood	10	$16.00	$3.83¾	$29.30	$2.93	.042 9-10
Reo	8	C. C. Singer	4	7.99½	0.25½	13.54	3.38½	.049 3-5
Compound	15	F. C. Carter	5	10.87½	2.12	18.627	3.72½	.054 3-5
Wayne	20	A. L. Kull	5	12.40¾	2.10	19.815	3.963	.058
Olds	8	F. Munroe	4	10.35¾	0.42	15.86	3.965	.058
Compound	15	C. P. Hatch	4	10:34¼	2.13	17.185	4.296	.062 9-10
Marmon	20	A. Largenson	5	14.82⅛	1.40	22.91½	4.583	.067 1-10

Morris Discusses Chauffeurs and Speed.

Dave Hennen Morris, president of the Automobile Club of America, knows of a chauffeur in New York who receives a salary of $6,000 a year for his services. He said so before 300 students of the Y. M. C. A. automobile school on the occasion of the opening of its second year, on November 1, when he was called up to make the inaugury address. Mr. Morris did not give his name nor state that jobs of that sort are readily to be found. In fact, he intimated that they are not, and instead of holding out roseate pictures of a life of idleness and prosperity to the neophytes, proceeded to score quite roundly the existing type of chauffeur and the customs which hedge him about. Finally, he pointed out the fact that for an honest, sober and trustworthy man, well schooled in his work, there is an ample opportunity, but said that a man who intended to drive a car must not drink.

"About two years ago," said Mr. Morris, "I stated that nine-tenths of the automobile accidents were due to drunken chauffeurs. I have been called prejudiced because I had an unfortunate experience myself, as a result of which I had to pay for some expensive repair to my machine and now have a suit of $5,000 damages. But I see no reason to change my assertion to-day. . .A man who is going to drive a car must not drink."

"I believe," he said, "that it is positively true that drunkennes is at the bottom of nearly all the automobile accidents." Then, turning is attention to the existing speed law, he characterized it as being a bad one in that it virtually makes every driver of a car guilty of its violation, inasmuch as no one can drive a car continuously at the minimum rate of ten miles an hour.

"The average speed," added Mr. Morris, "is between fifteen and eighteen miles, and that is sufficient. That speed corresponds to ten miles with a horse—that is, an automobile at eighteen miles an hour can be controlled as readily as a horse going ten miles. If you are arrested don't tell the policeman he is in error, for the fact of it is we are all guilty. A law, therefore, that can't be obeyed is a bad one, and it is absurd to arrest a person for technical violation of the law. I hope to see it changed very soon."

Mr. Morris also took occasion to score the use of acetylene lamps in the city, condemning the practice as both dangerous and useless. Their usefulness in the country in lighting the road ahead he commended, but said that in the city where there is but little danger of running into pitfalls, their blinding light tends to bewilder pedestrians and cause accidents.

By way of conclusion, he attacked the subject of graft, saying that a few years ago the worst man he could think of was the plumber, then the electrician, and finally the chauffeur. "But I don't think so now," he said, and closed with a little admonition against the practice.

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NEWARK HAS A FREE SHOW

Tremendous Crowd Turns Out and Sees Oldfield and Other Men and Things.

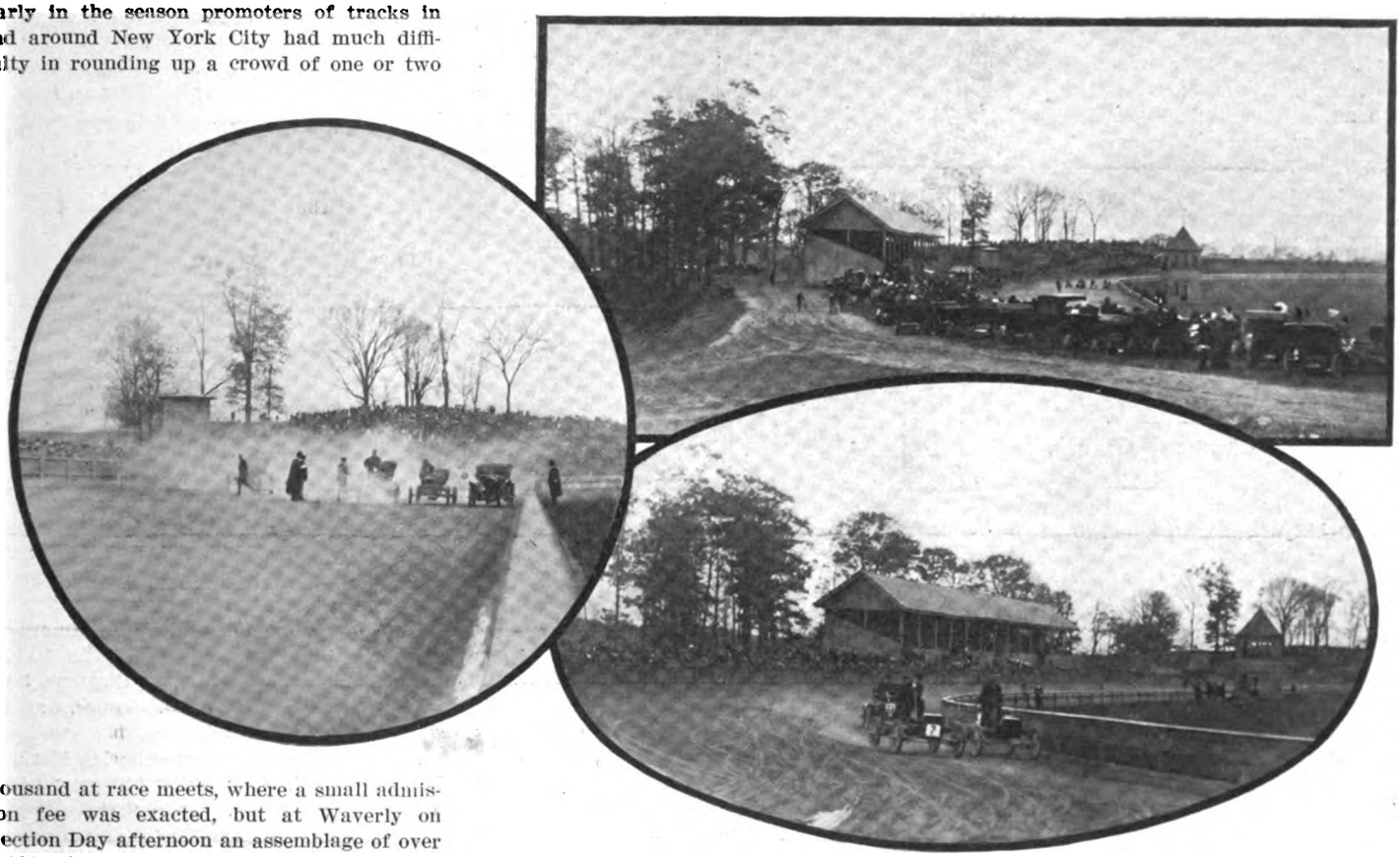
"Were the devil to say everybody can come to hell, it's free, I expect there would be many persons accept the offer just for that reason," was the observation of one onlooker at the third race meet of the New Jersey Automobile and Motor Club at Waverly Park, Newark, N. J., on Tuesday afternoon, 7th inst. While the remark savored somewhat of relevance, it seemed not altogether malapropos. Early in the season promoters of tracks in and around New York City had much difficulty in rounding up a crowd of one or two thousand at race meets, where a small admission fee was exacted, but at Waverly on Election Day afternoon an assemblage of over 12,000 witnessed the contests. In the latter case the meet was free.

That the meet was a success is unquestionable, and although the open events were confined to stock cars they were exciting. The police arrangements were perfect. Four well known cracks were there, and treated the immense crowd to exhibitions. Barney Oldfield was resplendent in all his glory, and blazoned forth in a brand new suit, with hat, shoes, scarf and gloves to match. The crowd did not recognize Barney when he drove on the track, probably due to the fact that the Green Dragon driver has changed the shape of the cigar he invariably has stuck in one corner of his countenance. Instead of the usual breva-shaped "stump," Oldfield dry-smoked a cigarette. When the Motor World man asked the Peerless driver his reason for the cigar change he replied:

"Oh, you see the little one offers less wind resistance."

It apparently made little difference in this case, for Oldfield drove two miles in 2:24¼. The first mile was made in 1:12½. It was announced as a new record for a half mile track, but when some of the newspaper men asked W. J. Morgan—he had the programme privilege and a few others—what the old record was, the "honorary" member of the N. J. A. & M. C. did not know. Secretary Batchelder, of the A. A. A., smiled, but did not contradict the promoter.

Maurice Bernin, in the inverted boat-shaped Renault, treated the crowd to a four-mile exhibition. Bernin was chary of the turns, but showed great speed on the stretch, which caused some wag to exclaim:



SCENES AT NEWARK'S FREE RACEMEET.

"Gee, look at Maurice Bernin up the track!"

The wag was the fat and jovial Bernard M. Shanley, who, notwithstanding that he never waved the flag in the right lap, always fired the pistol at the wrong time and displayed a remarkable degree of omnipresence—made an ideal starter.

Montague Roberts, in the rejected Thomas racer, drove three miles against time in 3:46¼, and C. F. Warren, of Boston, in the Grout steam car, was carded to go three miles, but the steam car refused to do two miles better than 3:25½, so it sufficed.

The real feature of the afternoon's sport was the surprising work of the 22-horsepower Buick and the Maxwell runabout. The Buick finished first in three open events, and second in a handicap, while the 16-horsepower Maxwell scored two seconds over cars of twice the power, and crossed the tape first in the handicap. H. Fleming, the driver of the Maxwell, demonstrated that judgment in a race is a factor as well as speed. In every event that the Buick went ahead Fleming kept his little car so close behind the larger car as to reduce the wind resistance to the minimum, enabling him to get placed so many times.

There were four starters in the five-mile handicap for motorcycles, which was won in runaway fashion by P. Drummond, astride a 1¾-horsepower Indian, with 45 seconds handicap. J. I. Marion, 1¾-horsepower Indian, from the same mark, came in second, and C. H. Lane, 5-horsepower Curtiss, from scratch, finished a close third. Time, 7:49. The summaries:

Five miles, handicap, motorcycles—P. Drummond, 1¾ Indian (0:45), first; J. I. Marion, 1¾ Indian (0:45), second; C. H. Lane, 5-horsepower Curtiss (scratch), third. Time, 7:04.

Three miles, for stripped single cylinder cars—T. M. Uppercue, 9-horsepower Cadillac, first; M. Apgar, 9-horsepower Cadillac, second; F. L. C. Martin, 8-horsepower Oldsmobile, third. Time, 4:53.

Five miles, free for all: First heat (three miles)—Stanley Atkinson, 12-horsepower Franklin, first; Harry T. Deane, 12-horsepower Franklin, second; H. Fleming, 10-horsepower Maxwell, third. Time, 4:47. Second heat (three miles)—H. J. Koehler, 22-horsepower Buick, first; Q. H. Plank, 16-horsepower Reo, second; Perry E. Hall, 15-

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horsepower White, third. Time, 4:37⅘. Final heat—H. J. Koehler, 22-horsepower Buick, first; H. Fleming, 9-horsepower Maxwell, second; Stanley Atkinson, 12-horsepower Franklin, third. Time, 7:37¼.

Five miles, for touring cars, regularly equipped, carrying four passengers—H. J. Koehler, 22-horsepower Buick, first; C. F. Warren, 28-30-horsepower Grout, second; Harry T. Dean, 12-horsepower Franklin, third. Time, 8:03¼.

Five miles, open—H. J. Koehler, 22-horsepower Buick, first; H. Fleming, 10-horsepower Maxwell, second; Stanley Atkinson, 12-horsepower Franklin, third. Time, 7:38½.

Five miles, handicap, for club cup—H. Fleming, 10-horsepower (0:15), first; H. J. Koehler, 22-horsepower Buick (scratch), second; C. F. Warren, 28-30-horsepower Grout (0:45), third. Times, 7:46, 7:35 1-5.

Two miles against time—Barney Oldfield, 60-horsepower Peerless. Time by miles, 1:12½, 2:24¼.

Three miles against time—Montague Roberts, 60-horsepower Thomas. Time by miles, 1:15½, 2:31, 3:46¼.

Four miles against time—Maurice Bernin, 60-horsepower Renault. Time by miles, 1:18¼, 2:36½, 3:52½, 5:08¾.

Two miles against time—C. F. Warren, 40-horsepower Grout steam car. Time by miles, 1:42½, 3:25½.

St. Louis Councilmen Go Daft.

In St. Louis, Mo., hotbed of arrent motorphobia, the City Fathers have been thrashing out a bill which is intended to effectually "do" any and all who have the timerity to drive a motor car. It is framed with the intention of changing the present penalty for violation of the ordinances from a fine to a term of imprisonment in the workhouse. In reciting the kinds of vehicles affected the ordinance names any "automobile, locomobile, motor carriage or horseless carriage, whether driven by steam or electric power." The only two delegates in the august body who own machines combined to oppose the measure on the ground that it was couched in terms which would make it include locomotives. Their motion was, however, declared "out of order," and the bill was passed to a second reading.

A. C. A. Renominates Morris.

Dave Hennen Morris has been renominated for the presidency of the Automobile Club of America. The other nominations are: For first vice-president, Colgate Hoyt; for second vice-president, Frederick G. Bourne; for third vice-president, Clarence Gray Dinsmore; for treasurer, W. S. Fanshawe; for governors to serve three years, Colonel John Jacob Astor, George F. Chamberlin, Schuyler Skaats Wheeler; for governor to serve two years, William Pierson Hamilton; for governor to serve one year, John E. Bourne.

They have even applied a gasolene engine to a road roller. One of the machines is in use in St. James Park, London.

CLEMENS'S FAST HUNDRED

Sets up New Record after Nip and Tuck Race at Indianapolis's Much Postponed Meet.

Full of distinction was the automobile race meet run off at the mile Fair Grounds tract at Indianapolis, Ind., by the racing association of that city last Saturday, 4th instant. Primarily, it was distinctive as the most deferred race meet ever held—it had been postponed five times on account of the sulkiness of one of the motorists' enemies, Jupiter Pluvius—and also because an American car, specifically the National, lowered the record for 100 miles; thirdly, it marked the first appearance in competition of the 100-horsepower Premier which was built for but did not compete in the Vanderbilt cup race. Incidentally a car executed the fence plunging act without injury either to itself or the driver.

In point of competition the meet was one of, if not the best, held this season, sensational finishes marking most of the events. The attendance had probably been materially diminished by the many postponements, and not over 1,500 people were assembled in the grand stands. Small attendance does not necessarily denote lack of enthusiasm, as was well demonstrated throughout the afternoon.

The surface of the track was in perfect condition when, shortly before 12 a. m. the five drivers—W. F. Clemens (30 horsepower National), Charles Merz (30 horsepower National), Fred. Tone (16 horsepower Marion), Frank Moore (16 horsepower Maxwell) and Ray McNamara (16 horsepower Premier)—breasted the tape for the 100-mile run, the feature event of the day. The Marion car experienced tire troubles after twelve miles of the century had been completed and dropped out of the running. Shortly after the Maxwell hit for cover, and this left three cars to fight it out for honors.

This was undoubtedly the closest race that has ever been witnessed. The phrase, "They're all alike," is well applied to the National cars. For exactly eighty-three miles they raced hub and hub, neither being able to gain a yard on the other. At the end of the eighty-third mile Merz was compelled to stop to replace a tire, losing a few minutes. Merz continued, and it was in the ninety-fifth mile that the only accident occurred. When rounding into the stretch of this mile one of the rear tires gave way and both driver and car crashed through the fence. He pluckily held his seat, and before the crowd realized what had happened was "hoofing" it for the judges' stand, minus a scratch. That Merz has plenty of grit was afterwards evidenced. When his car was fixed up he entered all the other events for which it was eligible.

Clemens finished the century in 1 hour 58 minutes 21 4-5 seconds, thus eclipsing Guy Vaughn's record of 1:56:39 made on the Empire track, New York, early in the summer, by 3 minutes 17 1-5 seconds. McNamara, in the Premier, finished in 2:35:31.

Clemens and Merz had another neck and neck fight in the five open. In this Merz took the aggressive and manipulated his clutch better than his opponent, so that he drew a lead of ten yards at the start, which he maintained until the last half of the fifth mile, when Clemens moved up to his front axle. The two crossed the tape scarcely three feet apart, Merz leading. Merz also came to the fore in the five mile "owners' race," and the three mile novelty.

Honors in the other events were equally distributed between Carl Fisher and Ray McNamara, both of whom drove Premiers. The last named driver captured the five mile handicap and an oven event at the same distance, and Fisher, in the intended 100 horsepower Vanderbilt car, drove a five mile exhibition in something approaching a "mile-a-minute" clip and won a special five mile handicap from scratch.

Very clever work in the matter of handicapping was made apparent in this latter event. Fisher was given the honor mark, the two Nationals were given 55 seconds and the stock Premier 1 minute 18 seconds. The race was gruelling, and Fisher overhauled all but Merz. He "nailed" him right at the tape, winning out in a driving finish by less than a yard. The summaries:

One hundred miles, for stripped tock cars—W. F. Clemens, 30 h. p. National, first; Ray McNamara, 16 h. p. Premier, second. Times, 1:53:21 4-5, 2:35:31.

Five miles, handicap—Ray McNamara, 16 h. p. Premier (1:10), first; Fred Tone, 16 h. p. Marion (0:20), second; W. F. Clemens, 30 h. p. National (scratch), third. Times, 8:03 4-5, 8:25 3-5.

Five miles, for owners—Charles Merz, 30 h. p. National, first; J. A. Allison, 20 h. p. Pope-Toledo, second. Time, 6:31.

Three miles, novelty for touring cars fully equipped, carrying three passengers, unloading and loading at each quarter—Charles Merz, 30 h. p. National, first; Dan Teeton, 16 h. p. Marion, second; Harry Hammond, 16 h. p. Premier, third; J. A. Allison, 20 h. p. Pope-Toledo, fourth. Time, 8:44 1-5.

Five miles, for middle weight stripped stock cars—Ray McNamara, 16 h. p. Premier, first; Fred Tone, 16 h. p. Marion, second. Time, 6:47.

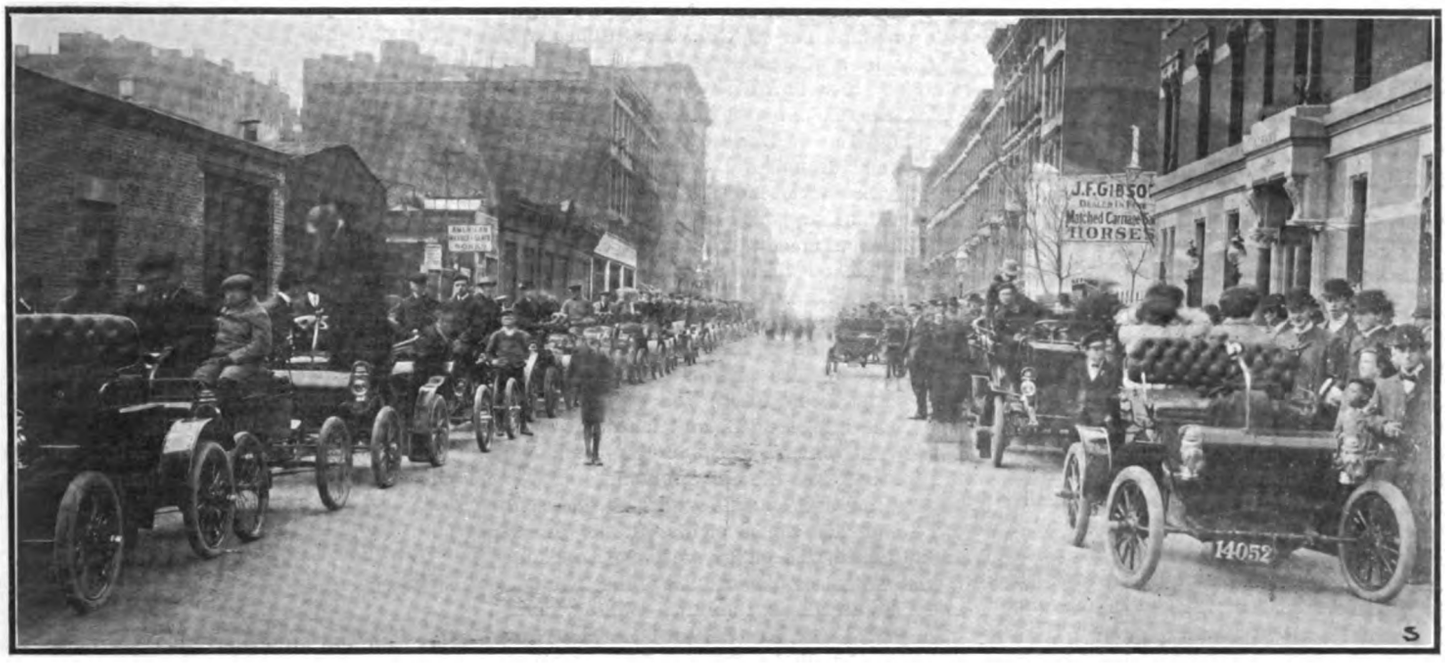
Five miles, open—Charles Merz, 30 h. p. National, first; W. F. Clemens, 30 h. p. National, second; Ray McNamara, 16 h. p. Premier, third. Time, 5:49 3-5.

Five miles, special handicap—Carl Fisher, 100 h. p. Premier (scratch), first; Charles Merz, 30 h. p. National (0:55), second; Ray McNamara, 16 h. p. Premier (1:18), third; W. F. Clemens, 30 h. p. National (0:55), fourth. Time, 5:24 3-5.

Five miles, against time—Carl Fisher, 100 h. p. Premier. Time, 5:05 3-5. Fastest mile, 1:00 4-5.

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How Oldsmobilists Celebrated Election Day.

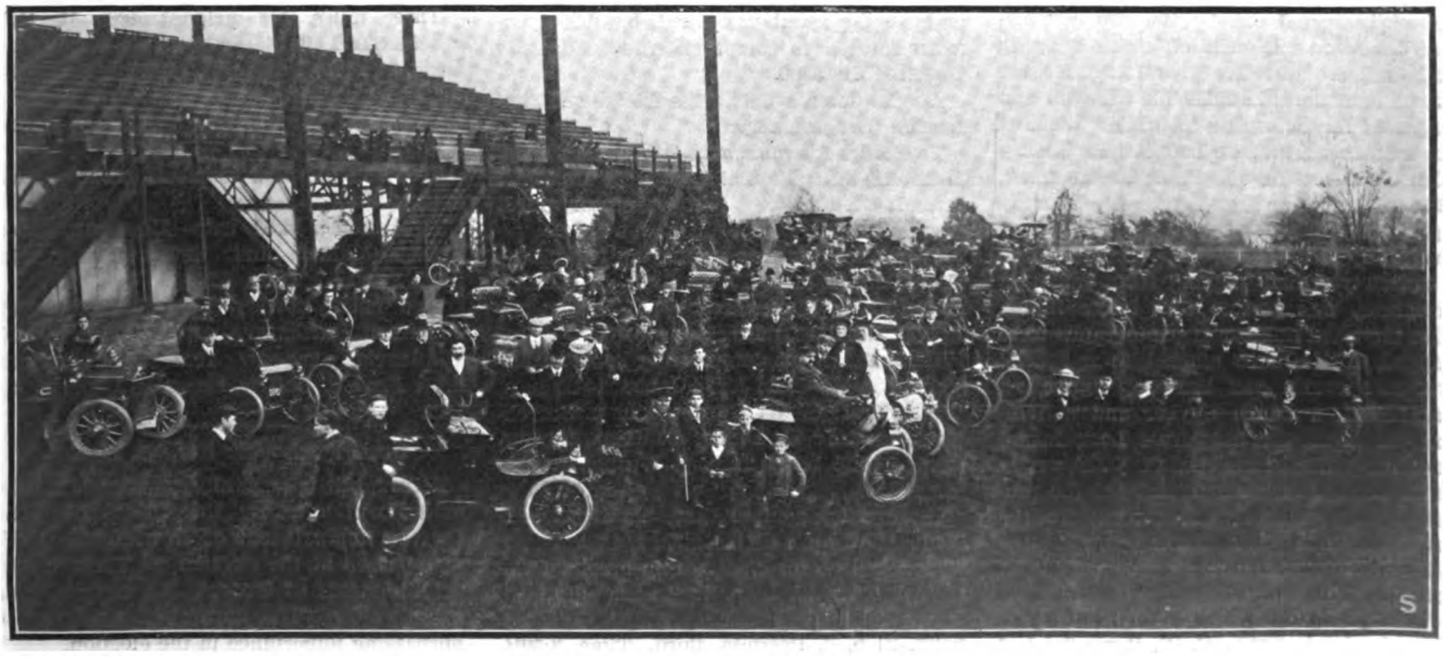


THE START FROM NEW YORK.

When General C. T. Cutting, who recently took over the Olds agency in New York City, hit upon the idea of a reunion of owners of Oldsmobiles and engaged the Empire City track for the occasion, he builded better than many knew. The outing took place on Election Day afternoon and nearly seventy runabouts and half a dozen touring cars made the start from Broadway and 53d street. After the uneventful journey up Fifth, Seventh and Jerome avenues to the Empire track, the participants sat down to luncheon in the club house. Following luncheon, General Cutting made a brief address of welcome in which he explained that it was just five years since the advent of the first Oldsmobile into the city. Roy D. Chapin, sales manager of the Olds Motor Works, also made a few remarks. In the drawing for the 1906 Olds runabout James Durand of No. 210 West 109th street, picked No. 56, which was the last to be drawn from the box, and won the prize.

Several races furnished sport for the remainder of the afternoon, all of them of course for Olds owners. H. B. Hutchinson, of Hempstead, L. I., won the one mile vent for runabouts in easy fashion from Freeman Munroe. F. Holbrook followed. Time, 2:00. In the event for touring cars, at the same distance, F. Iverson Taylor finished first in 2:40 3-5. C. E. Ross and J. E. Mitchell finished first and second in the half-mile affair and Mitchell crossed the tape first in the two mile. Time, 5:06 2-5. N. S. Seeley won the quarter-mile backward and F. Holbrook showed to the front in the gymkhana at one mile.

Mrs. Joan Newton Cuneo, of Richmond Hills, Staten Island, was allowed to drive an exhibition in her stripped White steam car. On the first trial she completed the circuit in 1:20 3-5 and asked permission to make a second attempt. The next trial was better, 1:15 being the time.



THE GATHERING AT EMPIRE CITY TRACK.

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QUAKERS SEE THE LADY

And One of Them Was Mean Enough to Beat Her—Other Features of the Meet.

There was enough excitement crowded into two hours last Saturday, 4th inst., at the famous old Point Breeze driving track at Philadelphia, Pa., to satisfy anybody looking for thrills. It was the occasion of the first race meet of the Philadelphia Automobile Racing Association, and there was something doing every minute. One man had his leg broken; one car went through the fence, and another machine caught fire just as it was starting an event; Montague Roberts broke the five-mile record—for that track—in his intended Vanderbilt Cup racer, and Mrs. Joan Newton Cuneo, of Richmond Hills, Long Island — whose press agent fondly styles her the "champion woman driver of the world," and whom the A. A. A., in defiance of good taste and everything else, permits to cavort on the track—won one race and was defeated in another.

The presence of Mrs. Cuneo, Roberts and Dixon, the Englishman, who is here exploiting a Dutch car, prevented the meet from having the semblance of a purely local affair and made it a banner day for the Quaker City's automobilists and some four thousand other spectators, who flocked to the one-mile oval. When the first event was called it was estimated that over four hundred automobiles were parked in the inclosure—in fact, probably the greatest number that has ever gathered on one occasion in Philadelphia.

Featuring as the chief event of the day, or the one in which the fastest time was clocked, was the five-mile exhibition of Montague Roberts, who drove the 60 horsepower Thomas car which qualified for a position on the American Vanderbilt Cup team, but was airily tossed out by the cup commission. Roberts was sent off from a flying start, and the watches gave 1:02¾ for the first mile; Roberts handled his car well and completed the five miles in 5:14¾. When it was announced that he had beaten Barney Oldfield's record for the Point Breeze track, 5:28 3-5, the young New-Yorker was roundly applauded.

Naturally Mrs. Cuneo came in for a share of notoriety which, judging from past performances, was just to that lady's liking. After the usual number of photographs were snapped, Mrs. Cuneo started in a special three-mile event, and lined up against a Searchmont, a Dutch Spyker and a Winton. As usual, the lady from Long Island drove her White steam car. C. W. Rowe, in the 24 horsepower Searchmont, led the procession until rounding the stretch for the first mile, when Mrs. Cuneo came to the front. After that the race developed into a runaway, with the "driverine" miles ahead. To be explicit, the White crossed the tape a third of a lap in front. C. W. Rowe finished second. Time, 4:08. She subsequently competed in another special event of two miles against a 35 horsepower Apperson, driven by Philip Kirk, but Mr. Kirk was too ungallant to allow her to win. Mrs. Cuneo also started in a five-mile free-for-all, but was "obliged" to withdraw.

Max La Roche had a narrow escape when he plunged over the western bank of the track and through a board fence. Luckily neither the driver nor the car was injured. The accident happened in a three-mile event. The Studebaker car, with La Roche at the wheel, finished third, although disqualified for fouling. He thought he still had another mile to go, and was making a desperate effort to pass the winner, who was slowing up on the western side of the track, when attempting to negotiate the curve at full speed, the car skidded, and before it could be stopped plunged through the fence and disappeared over the embankment.

Spectators and officials rushed to the scene and found La Roche sitting in his car at the bottom of the gulley, with the wreckage of the fence strewn around him. He was badly frightened, but unhurt. Willing hands soon pulled his car out of the mud and water in the ditch, and the driver made a circuit of the track to show that he was unhurt.

Had the course been patrolled as it should the other accident would not have occurred. At the finish of the special race for Elmore cars a crowd of several hundred persons who had surged through the guidons separated to let the winner, M. J. Swain, pass through into the paddock. John Danill, one of the spectators, missed his calculations and was knocked down by the moving car. He was sent to a nearby hospital with a broken leg.

The special race for a purse of $1,000 between Harry Edwards's 16 horsepower Reo and C. W. Sprague's 22 horsepower Buick was not run because a connecting rod in the Reo broke earlier in the afternoon. Edwards asked to be allowed to substitute another car or have the event postponed, but his opponent refused to compromise, so Edwards forfeited the $500.

All the other events were fairly well contested. The summary:

Two miles for runabouts—W. David, 8 h. p. Maxwell, first; F. Smith, 8 h. p. Maxwell, second; Dr. Ferguson, 8 h. p. Autocar, third. Time, 4:26¾.

Two miles, for cars costing up to $1,500—E. Wilkie, 22 h. p. Buick, first; A. C. Harmar, 16 h. p. Elmore, second; C. B. Cleaver, 18 h. p. Rambler, third. Time, 3:10.

Three miles, for cars costing between $1,-50 and $2,500—Mrs. J. N. Cuneo. 45-20 h. p. White, first; C. W. Rowe, 24 h. p. Searchmont, second; E. Dixon, 20 h. p. Spyker, third; Philip Kirk, 24 h. p. Winton, fourth. Time, 4:08.

Three miles against time, motorcycle—H. Witham, 4 h. p. Witham. Time, 4:32.

Three miles, for cars costing over $2,500—Philip Kirk, 35 h. p. Apperson, first; S. Dixon, 20 h. p. Spyker, second; F. Wostenholm, 24 h. p. Peerless, third. Time, 3:59½.

Max La Roche (Studebaker), disqualified.

Five-mile match between Harry Edwards, 16 h. p. Reo, and C. W. Sprague, 22 h. p. Buick, for purse of $1,000—Walkover for Sprague. Time, 7:37.

Two miles for 18 h. p. Rambler cars—P. B. Huyette, first; L. C. Vogel, second; Thomas Roberts, third. Time, 3:34½.

Five-mile exhibition—Montague Roberts, 60 h. p. Thomas. Time by miles, 1:02¾, 2:06, 3:08¼, 4:11¾, 5:14¾.

Two miles for 16 h. p. Maxwell cars—Charles Hinze, first; W. Longstreth, second. Time, 3:35.

Two miles for 16 h. p. Elmore cars—T. Swain, first; A. C. Harmer, second; H. P. Stoey, third. Time, 3:48½.

Five miles, free-for-all—Montague Roberts, 60 h. p. Thomas, first; Philip Kirk, 35 h. p. Apperson, second. Time, 6:11¼.

Three miles, special—Philip Kirk, 35 h. p. Apperson, first; Mrs. J. N. Cuneo, 15 h. p. White, second. Time, 3:53.

Freeport has a "Ladies Race," too.

Probably three hundred people witnessed the first automobile race meet ever held at Freeport, Ill., on Friday last, 3d inst. According to advices from the Western town some of the spectators enjoyed the sport, while others considered them "beastly dull," and this despite the fact that a "ladies' race" was on the programme. This is probably because most of the competing cars came from Rockford, a neighboring rival. The summaries show that no records were broken:

Three miles—Fred S. Cutler (Knox), first; James Rogers (Premier), second; R. Savage (Rambler), third. Time, 6.53.

Two miles, for ladies—Miss Levings (Rambler), first; Mrs. Cole ("Frightened Rabbit"), second. Time, 4:18¾.

Three miles—Murray Carpenter (Rambler), first; D. Rogers (Knox), second. Time, 7:52½.

Three miles, for stripped cars—B. Cole ("Frightened Rabbit"), first; F. S. Cuttler (Knox), second; J. W. Miller (Maxwell), third; Harry Shoemaker (Cadillac), fourth; James Rogers (Premier), fifth. Time, 5:13½.

Free for all slow race—Alderman Brokhausen first.

Two miles, local cars—Alderman Brokhausen (Moline), first; Erwin Hoefer (Moline), second. Time, 4:52½.

Two miles, novelty—Fred Jastram, first; Alderman Brokhausen, second. Time, 10:35.

Balancing see-saw feat—Fred Jastram, first; Fred S. Cuttler, second. Time no object.

Good Roads Vote Not yet Known.

Although it is generally supposed that the amendment creating the $50,000,000 fund for the improvement of New York's roads was passed at the election on Tuesday, the definite result of the vote has not yet been made public. The matter of men was of surpassing importance in the election.

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YOU'RE NOT "IT," SAYS PARIS

Newspaper Juggling with Figures Stirs France and England—British Bid for Panhard Plant?

Paris, Oct. 24.—The publication of an article by a well known Paris journalist, proving by figures that are manifestly false that England is the world's biggest market for automobiles, and should therefore be assiduously cultivated by the French trade, has awakened quite a sensation in that country. The British Empire Motor Trades' Alliance has reprinted the article, which has had the honor of republication in the different journals, and the statements have been so widely disseminated that the Britishers have easily convinced themselves that they are the biggest consumers of motor cars in the world and are in a fair way of supplying their own needs.

This comfortable assurance would have been modified somewhat had the British Empire Motor Trades' Alliance taken the trouble to analyze the figures and stick to facts, when they would have seen that there has been a hopeless muddle of returns for seven months and a year. The facts are sufficiently satisfactory as showing that the British trade is steadily growing, and there was no necessity to inflate them for the purpose of a boom. The British trade has long shown an inclination to present matters in the most glowing light, in the hope that the public will accept this evidence of business prosperity as proof of the superiority of British vehicles, and while this policy may be justified in a certain measure, there is always a danger of its being overdone. It is so in the present case. The Frenchman's figures have been analyzed and found wanting and the bubble has been pricked. Nevertheless, more have read the original article and the editorial comments thereon than the subsequent criticisms, so that there is still a very large proportion of the population in the British Isles who believe that Britain stands first as a motor manufacturing and motor using country.

So far as concerns the business being done in motor cars, England certainly takes a leading position, and it is easy to understand that home manufacturers should be looking with some jealousy to the enormous and growing importation of foreign vehicles and should be doing everything in their power to divert the public demand from foreign to British cars. If they could monopolize the business the home manufacturing industry would be in a state of unexampled prosperity. This monopoly is worth striving for and it is occupying the undivided attention of the whole trade, which is doing everything in its power to create a popular preference for the home made article. For a long while they harped on the patriotic string with no very tangible result, for the motor car is not one of those things that you can label with a party ticket except at the elections, and finding that the British will buy the best in the cheapest market, they are trying to show that there is nothing to touch the British car on the score of quality and price. It was with the idea of pushing the home vehicles right to the front and keeping the foreign productions in the background that the trade has been juggling with the show dates and holding the Olympia show three weeks before the Paris Salon, so as to take the bloom off the French show, but I do not think that the Paris event will suffer in the slightest way from this competition, notwithstanding the undoubted success of the Olympia gathering. London can never become the motor mart of the Continent.

While the Britishers are proclaiming the superiority of their own cars, it is a little curious to see how anxious they are to get control of good business propositions in France. There are several motor companies in this country which have been bought up by English capital and are now purely English concerns, and at least two have been added to the list during the past few weeks, one of them a manufacturer of heavy vehicles, and the other a small firm who have specialized themselves in low priced cars. Now it is rumored that negotiations are in progress for the purchase of the Panhard & Levassor business by a British syndicate. The price is stated to be $10,000,000. I have been unable to ascertain whether this statement is true, but no official denial has been forthcoming. If such an offer were made a few years ago Panhard & Levassor would certainly have refused it, but since that time there have been many changes in the automobile industry with the coming into existence of a dozen firms who are turning out vehicles with as good a reputation as the Panhard, and I doubt if the firm could refuse such an offer if it were made now. As to whether it be equally good business for the buying syndicate is another matter, and it would doubtless require a lot to convince the public that Panhards are worth such a huge capitalization. They have swallowed a lot in the past—but $10,000,000!

Dinsmore Succumbs to Pneumonia.

Clarence Gray Dinsmore, one of the most widely known motorists in the world, succumbed yesterday in the Waldorf-Astoria, in New York, to an attack of pneumonia. Although a New Yorker by birth, he had spent the greater part of his time abroad, particularly during the last eighteen years, when he had divided his time between Paris and the Riviera. An enthusiastic lover of the sport, and himself a noted driver, he was one of the charter members of the Automobile Club of America, and had served as its foreign representative. A year ago he was elected its third vice-president, and was assigned to its Committee on Foreign Relations. Besides his American affiliations, Mr. Dinsmore had done much to promote the German branch of the industry, having entered his car repeatedly in the Bennett and Vanderbilt events as a member of the German team. Mr. Dinsmore was 59 years of age.

IN FAVOR OF CHAINS

One of Their Advocates Takes Issue With Shaft Drive Partisans and Outlines Advantages.

"Although a French car equipped with a shaft drive won the Vanderbilt Cup, it might be stated that the Italian car made by far the most wonderful exhibition in the cup race—equipped with a double chain drive," remarked a Whitney chain man the other day when that moot point was under discussion. "But this probably would prove nothing in favor of the chain transmission, as the skilful and fearless Lancia would undoubtedly have made a similar record with a gear driven machine if the parts were in good proportion and backed up by a sufficient amount of power. Both the chain and bevel gear methods of transmission have given our manufacturers and users a lot of trouble, but step by step the difficulties have been eliminated until both styles have made records we may well be proud of.

"I have been told that a certain American racing car which the makers wished to enter in the cup race was found before the elimination trials to be considerably overweight, but they brought the same to a point well under the stipulated weight by abandoning the gear drive and replacing it with the double chain. If this is true, it would indicate that the double chain transmission gives greater strength with less weight, and this point should not be passed unnoticed.

"A number of years ago our automobile manufacturers equipped their steam cars with bicycle chains, and then added extra seats for more passengers without increasing the size of the chain. This gave the chain drive a "black eye" from the very start, but, notwithstanding the fact, I believe about 80 per cent of the cars are chain driven at the present date.

"The chain and sprockets used on most all the earlier model gasolene cars were not correct and suitable for the purpose, and most of the chains were damaged by interference, as but few manufacturers allowed sufficient space for chain clearance. When it was found that chains were not right for the severe duty it was in most cases impossible to remedy the difficulty by supplying larger or heavier chains on account of the limited space provided. When the gear drive was presented it was welcomed by many who had been annoyed with chain troubles, but later on they were equally disgusted with bevel gear troubles and difficulties with universal joints, thrust collars, weak rear axles, limited power, etc. Certain manufacturers made their own sprockets, and evidently assumed it was necessary only to mill in the same the correct number of teeth. If the sprocket were not the right width, not cut to the correct bottom diameter, teeth too straight on sides and irregularly spaced, sprockets out of line, etc., it was supposed to make but little difference.

"When some of the same manufacturers

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commenced to experiment with the gear drive they were obliged to purchase their gears from manufacturers who were expert in this line, and it was necessary to pay a high price for the quality and accuracy required to insure the gears revolving. If bevel gears were cut in the manner some sprockets have been cut the results would be astonishing.

"I believe both the shaft and chain drive at present on many cars are a success, but imagine the chain will be by far more popular in the future for the following reasons: Less weight, less friction, lower cost to manufacture, lower cost to repair, less time to repair.

"Ease of changing gear ratios to suit road conditions for various parts of the country.

"Saving on tires by less weight.

"More reliable rear axles for rough roads and heavy loads.

"In case of an accident the chain driven car may be pushed off a railroad track or from the centre of a road."

Checking the Price Cutter.

That at least one British manufacturer of small parts is in no mood to tolerate promiscuous cutting down of the listed price of his goods, and that he intends to deal in a summary and effective manner with any retailer who for the sake of a few sales in a single line, and the consequent advertisement to his business, is willing to disregard the listed price of the goods and dispose of them at slaughter house rates, is shown by the following communication which he dispatched to a house which has risen to a position of no little importance through the medium of this very practice:

"Our attention has been called to the fact that on page — of your motor catalogue you are listing our sparking plugs at rates that do not admit of proper profit to yourselves or anybody else. A plug which costs you 1s. 6d. you are listing at 1s. 7d.

"On page — you are listing our lubricating oil at cut rates; we have therefore given instructions to our staff that from this date they are on no account to supply you with any goods whatsoever, either for cash or for account, and anybody supplying goods will be subject to instant dismissal. This rule will remain in force until such time as your present prices for our goods are withdrawn and the proper prices, if any, are inserted. In addition, we must ask you please to immediately return us the electro of our —— plug, which is our property and which was not lent you with the idea of your ruining our trade in these plugs. Unless we receive this electro within seven days from date we will take legal proceedings for recovery."

Grease for the Wheels.

It is quite essential to the smooth running of the car that the hub caps be filled with grease at not infrequent intervals, so that a plentiful supply of lubricant for the wheels is assured. In cars which are fitted with ball bearings this, of course, is not necessary, but it is none the less essential that the bearings be given their proper incentive to good working.

REGARDING THE RANIER

Features of a Car that is Sold with a Most Unusual Guarantee.

When in the spring of the current year the Rainier Company, of New York, which up to that time had been closely identified with the electric vehicle business and whose heavy commercial types of machine already had gained considerable distinction, brought out the first Rainier gasolene car, it was not, and indeed is not now, generally known that the move meant that they would no longer have to do with electrics. This is the case, however, as also is the fact that the car at once gained the attention of the market not alone on account of its neat and pleasing construction, but also on account of the novel guarantee which accompanied each car sold. This guarantee, which was in effect an absolute agreement on the part of the makers to replace any part of the chassis which failed through any reason whatsoever, barring accident, within one year from date of delivery, proved a taking advertisement. So successful was the venture in every respect that the intelligence was given out early in the fall that from that time forth the firm would abandon the electric vehicle field and devote itself wholly to the production of gasolene machines.

Following close upon the heels of this announcement come the details of the second type of Rainier, marked "Model B." Constructed upon the same general lines as its predecessor, this car is essentially a betterment of it, and at once a more powerful and up-to-date type. It is characterized by the following features: In the engine, four cylinders, 30 to 35 horsepower, make and break ignition, interchangeable valves; transmission, three-speed shaft drive; frame, pressed steel, enclosed underneath; wheel base, 104 inches. The body is constructed entirely of aluminum, with liberal side entrances, the tonneau being large enough to permit of the addition of a couple of extra seats if necessary. There is ample locker room under the rear seat.

In the ignition system all the vital parts, including the advancing mechanism, are located at the tops of the cylinders and are readily removable or replaceable in case of derangement. The time shaft is driven independently of the cam shafts, by means of enlosed steel gears running in an oil bath, The Simms-Bosch, low tension magneto is carried on a boss of the engine base, and is entirely enclosed. The cam shafts are of case hardened steel with cams made integral with them, and are driven by enclosed bronze gears. Water circulation is accomplished by means of a positively actuated centrifugal pump, and the radiator fan, instead of being mounted on the radiator, is carried on a bracket affixed to the front cylinder.

The main bearings of the engine are fastened to the upper half of the case, so that the base may be removed without disturbing their adjustment. The arrangement of the motor is such that it can be removed from the chassis without being in any way dismantled, the exhaust and inlet piping and the cooling system being the only connections which it is necessary to break in order to dismount it.

The transmission system is of the ordinary type, the clutch being of the leather-faced cone variety, with a universal joint interposed between it and the gear case. The latter contains the usual essentials, the changes being accomplished by the movement of a single sliding member, which is forged on one piece. The gears, which are of 50-carbon steel, are bolted to flanges which are integral with the shafts. The case is aluminum.

The propeller shaft is also constructed of 50-carbon steel, with oil-hardened forks at the joints, and case-hardened pins. The rear axle construction embodies the excellent feature of having the load supported entirely upon the axle tube, while the driving shafts are simply called upon to transmit the driving effort and are free from all other stresses. The wheels are mounted on ball bearings, and the construction is such that the driving shafts may be removed entirely without disturbing the wheels or removing them from the car. The differential gearing is also mounted on ball bearings.

The front axle is of I-beam section, of drop forged nickel steel structure, and is equipped with reversed Elliott steering knuckles, fitted with ball bearings. The frame is of cold rolled pressed steel. The wheels are 34 inches in diameter, taking 4-inch tires. The braking equipment consists of a pair of internally expanding shoes on the rear wheels actuated by an emergency lever and a foot brake acting on the propeller shaft. All braking surfaces are arranged with phosphor bronze against steel, and all are double acting.

When the New Model is Nearly Ripe.

Sometimes the manufacturer who would have his forthcoming model granted a measure of advance publicity, and who is unwilling to give out full details, finds himself in rather a peculiar position when he sees the effect of his "hand outs" on the trade press. Thus a foreign print, which has been the recipient of one of those vague and startling disclosures which fail to disclose much of anything except the unbounded faith of the maker—in himself:

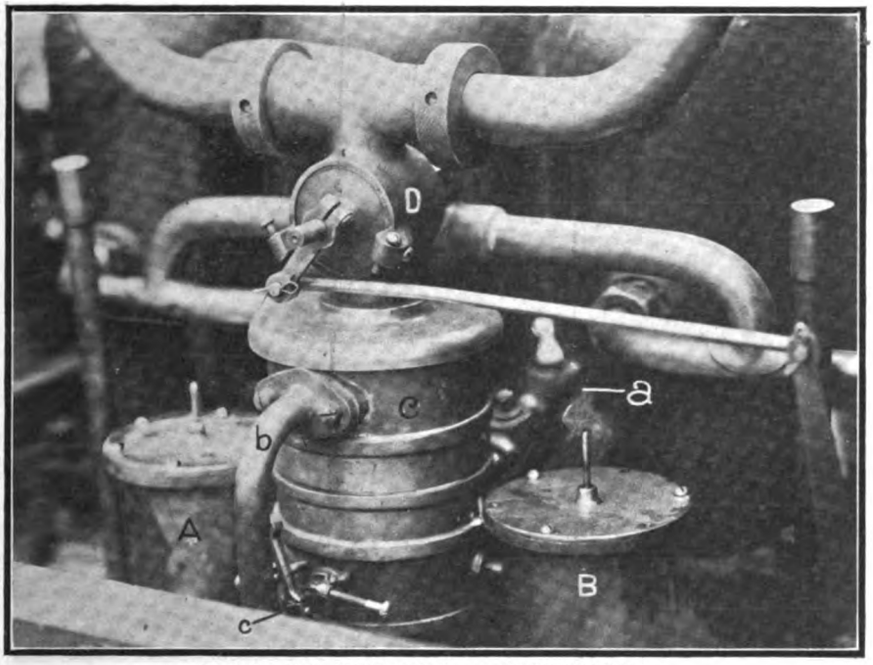
"We hear of a new Blank landaulet. There is quite an air of mystery about it. From what we can gather it has no chains—in fact, no gear at all worth mentioning. Its engine can neither be seen, felt, smelled nor heard, and it takes up very little more room than a cab without a horse, and will turn in the width of a narrow street. Just how it does all these things we are not at liberty to mention at present, but we hope in a week or two to say something a little less vague. There is even a rumor to the effect that there is a prize to be given to the first man who finds the engine, but we give no credence to it."

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KEROSENE IS FUEL

Twombly Devises a Carburetter that Renders it Possible—Also has Novel Shock Absorber.

Probably the two most important problems which face the motor car designer of the day, if he be desirous of keeping at the head of the march of progress, are those of suspension and the carburetion of heavy oils. Of these two problems the first is occupying the attention of many a "professional inventor," as well as those who are working in the interests of a single line of machines, and, though many strange results are being brought forth, not a few of which promise much toward the future emancipation of the automobile from the pneumatic tire, still the universal adoption of the solid tire used in conjunction with some improved type of suspension is yet to be accomplished. Similarly, although there are not a few carburetters which have been designed to vaporize the heavier oils and carburate them for the uses of the gas engine, the truly practical type has yet to be produced in commercial form.

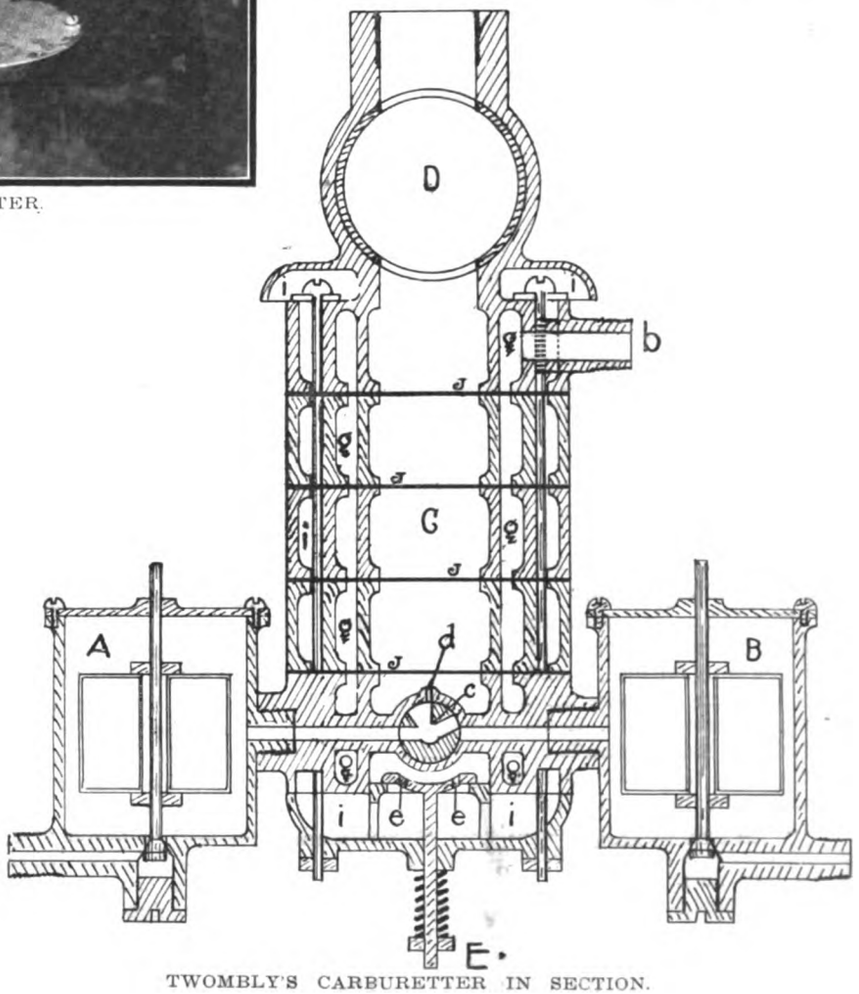


TWOMBLY'S KEROSENE CARBURETTER.

A machine which embodies among others the two novel features of a kerosene oil carburetters and a form of suspension which permits of the elimination of pneumatic tires in favor of the ordinary type of solid tires such as are commonly installed in the lighter forms of slow going commercial vehicles, is the Twombly car, manufactured by the Twombly Power Company, of New York City. This interesting machine, which is of the 25-30 horsepower order and otherwise perfectly "regular" in design, recently demonstrated to the perfect satisfaction of a Motor World man the somewhat startling claims of its designer, that he had produced a car which would run perfectly well using kerosene fuel, meeting the give and take conditions of city traffic with no more effort than would be shown by a machine of the ordinary type, and running on solid rubber tires, with as little vibration as would be experienced with pneumatics under the same conditions.

In the adaptation of the carburetter to the ordinary motor designed for the lighter oils it has been found expedient to use gasolene for starting purposes, since although it is possible to put the motor into action using the heavier oil alone, the use of the heavy vapor in a cold motor tends to form deposits upon the walls of the inlet passages, which clog them in the course of time. So that on this account and for the sake of convenience in starting without delay and loss of power before the carburetter has become heated to its normal temperature, a double fuel supply is carried, and the carburetter is provided with two float chambers, the one for gasolene and the other for kerosene. Once the machine has become heated, however, and the fuel supply has been shifted over to the heavy oil side, there is no further need for the gasolene until after it has been allowed to cool off again.

The use of kerosene or any of the other heavier oils involves no new principle in the matter of vaporization and carburation. The kerosene carburetter contains the same essential elements as that for gasolene, except that as the boiling point of the liquid is considerable higher than that of gasolene, it is necessary to heat it to a considerable degree in order to effect the breaking up of the vapor and its complete admixture with the air. This is effected in the Twombly carburetter by three several means—that is to say, by the heating of the oil, the heating of the incoming air and the subsequent heating of the mixture, all of which is accomplished by the use of a portion of the exhaust.



TWOMBLY'S CARBURETTER IN SECTION.

The precise method in which this is accomplished and the general arrangement of the

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device is here illustrated in exterior and sectional detail. The two float chambers, A and B, are placed diametrically opposite one another. in line with the car. They are precisely alike, having upwardly closing needle valves and feed into a common pipe, which is closed by a three-way cock, C, directly beneath the jet, D. The third opening in this valve, which gives to the jet, is wider than either of the others, and is so proportioned that when the valve is in an intermediate position the fuel is supplied from both sides, thus permitting the temporary use of a combination of the two fuels, and providing against a momentary loss of power in the motor while changing over from one to the other. This valve has also another special feature in that it is tapered like an ordinary stop cock, and is held against its seat by the action of a spring, by which means it is rendered self-grinding and bears against its seat with a constant tension.

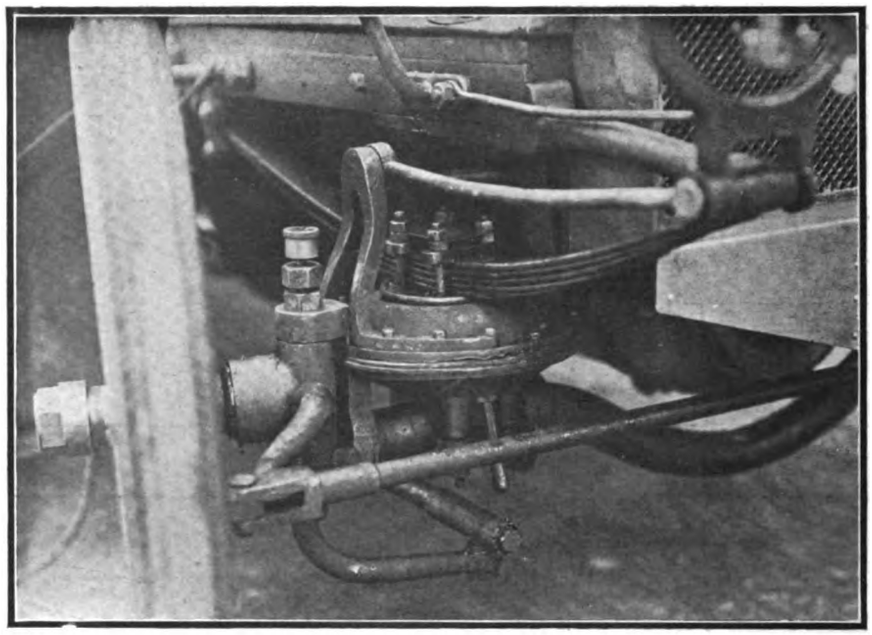
The space within the mixing chamber is similar to that in any carburetter, except that it is much longer and is intersected by a series of four brass wire screens of very fine mesh. Above these the throttle valve, D, controls the inlet to the engine in the usual manner. A double jacket surrounds the mixing chamber, that next the chamber containing the hot gasses which are used for heating, and the outer one containing the incoming air. This, entering by way of the annular opening, I, which surrounds the device at the top, goes down to the bottom, on its way passing through a series of four restricted openings which are covered by the gauze screens, and finally reaching the chamber of the base, whence they are drawn up through the valve, E, to the mixing chamber.

The valve, E, which is similar in action to the supplementary inlet common to most carburetters of current design, is perforated by four small holes, e, which are of sufficient area to give the proper mixture for the engine when running with the throttle nearly closed. For any greater speed the increased suction causes the valve itself to lift against the tension of the spring mounted on the lower end of its stem. The regulation of the tension of this spring controls the proportion of the mixture.

The hot gases which are taken directly from the exhaust pipe are led into the carburetter by the pipe, a, and, passing upwardly through the wire screens, is exhausted through the pipe, b. In its passage it heats both the inclosing walls of its jacket and at the same time heats the wire gauze which, completely intersecting both the air inlet and mixing chambers, serves at once to break up the gases as they are drawn through and to heat them.

In practice the chamber, A, which contains the kerosene feed, is used continuously, the three-way valve, c, being turned to the position shown in the sectional view. The efficiency of the exhaust jacket is so great that the gas is completely broken up and mixed, the temperature of the inlet commonly running as high as 200 degrees F., and hence there is absolutely no trouble from irregular firing once the right proportion of gas and air has been determined.

In the Twombly Pneumatic Shock Absorber the pneumatic tire is simply taken from the wheel and placed on the axle beneath the spring. The device in actual practice is as simple as the principle upon which it acts, for it is nothing more nor less than a resilient pneumatic cushion of a construction identical with that of an ordinary tire, inflated in the ordinary manner and carrying its load in the same way as a tire, and with the same effect.



TWOMBLY'S SHOCK ABSORBER.

As will be seen from the illustration, it consists of a circular cushion, 10 inches in diameter, having a convex gun metal base, bolted to the axle by means of clips such as are used for holding the springs in place ordinarily. The upper half of the cushion, which alone is flexible, consists of a compound fabric composed of a layer of rubber, a layer of woven fabric, a second layer of rubber, and over all a layer of pigskin which serves as a protection for the other layers. A couple of circular bronze plates placed at the centre of the cushion, one within and one without, serve as a bed for the spring, which is bolted to it by means of the usual lugs. An inflating tube with an ordinary tire valve is placed in the lower section, and serves for the occasional inflations of the cushion which are necessary.

The fabric is held at the joint with the metallic base by means of a bull ring bolted down. To this is also bolted a vertical arm in the case of the front cushion, to which is affixed a torsion rod coupled to the front spring dummy. This serves to guard against any possible serging action on the part of the cushions due to side thrusts in taking corners, and to keep the spring supports in the centre of the cushion. No such provision has been found to be necessary in the rear.

The car, which weighs about 1,600 pounds, is mounted on semi-elliptic springs of the common type, those in front being thirty-two inches long and having five leaves, while those in the rear are thirty-eight inches long and have seven leaves. The wheels, which are thirty inches in diameter, are shod with 3½-inch semi-solid clincher tires, which serve to ease the wheels and axles from the road shocks and to aid in the cushioning of the whole car. The general effect of the suspension is sensibly the same as that obtained from the ordinary pneumatic tire arrangement, and the unique system promises to open up an entirely new field in the matter of car mounting.

Tires Did Not Give Trouble.

Although most people had practically forgotten all about it, the Diamond Rubber Co. has been industriously running to earth the report that in the Vanderbilt cup race the Christie car had burst a tire. As it was the first time that car had employed Diamond tires and as owing to its odd construction it had the reputation of being a "terror" on tires, the Diamond people were unusually concerned. They made extended inquiry and failed to find any trace of tire trouble, a state of affairs borne out by Mr. Christie himself. In his statement he not only says that he had "no tire trouble whatever," but that if it had not been for the breaking of a connecting rod the night before the race, "you would have seen the tires making some fast time on my car."

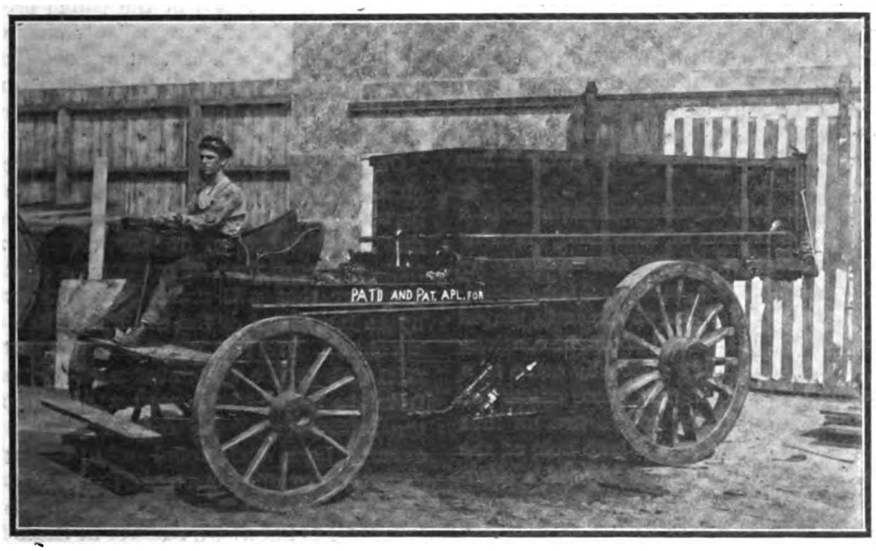
A firm which is making several large motors for gasolene railway cars has revived the practice of starting them by means of a powder discharge. In the present instance, cordite cartridges are used, three out of six cylinders being fitted with removable igniters, in the place of which are substituted the cartridges which are removed after the other cylinders have commenced to fire regularly.

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WOOD'S NEW MOTIVE POWER

He Holds It Close but Produces Impressive Figures Showing Its Capacity for Heavy Work.

Having long ago convinced himself that neither steam nor gasolene was suited to the best propulsion of heavy road vehicles conveying heavy loads, J. C. Wood, of No. 784 Madison street, Brooklyn, N. Y., has evolved what he styles a new power, but for which he has not yet selected a name. It has required seven long years of experimentation and labor to perfect it, but Wood believes it is now right, and that the world will hear much more of it. He has applied it to two heavy trucks, and the results have been such as to meet his fondest hopes. Because of certain patent protection he is seeking he is not ready to lay bare the secret of the new power, which is smokeless, noiseless and odorless.



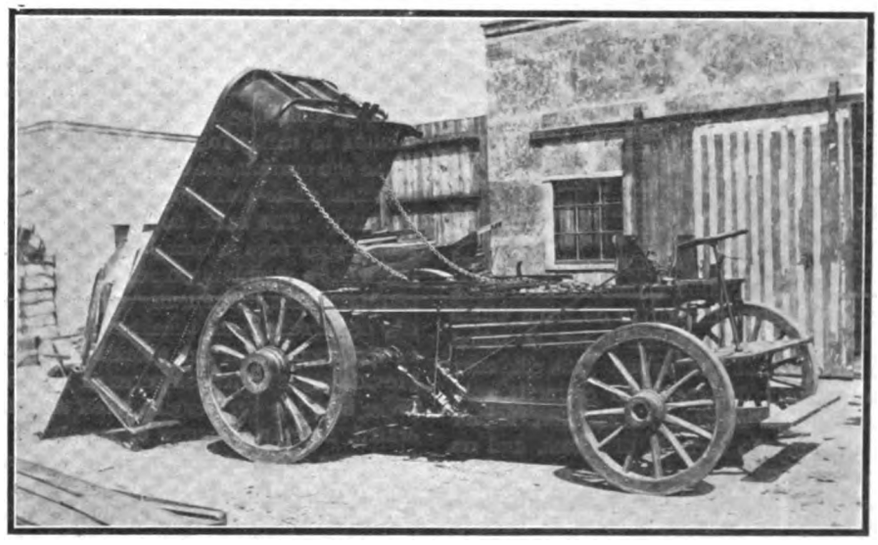
WOOD'S 150 HORSEPOWER TRUCK .

While neither steam nor gasolene, the inventor describes it as "embodying elements of both"; it has "the flexibility and distort of steam, but does not require a transmission gear or clutch and is easily controlled by the throttle."

Coal and a mixture of oil and water constitute the fuel and motive power, and applied to a truck experimentally used in hauling coal in New York for several months it carried from 10,000 to 12,000 pounds at an average of six miles an hour at a cost of 80 cents a day. The truck shown by the accompanying illustration is Wood's latest creation, and has been employed in hauling asphalt and paving stones. Carrying 14,000 pounds of the former, it has climbed an 8 per cent grade, one and one-eighth miles long, in 13 minutes, and completed the round trip of the six mile route on which this hill is located in 68 minutes. The time for a horse drawn truck over the same route with half the load is two and one-quarter hours.

Carrying 350 paving granite stones, the truck has climbed an 8 per cent hill two blocks long, and has attained a speed of ten miles an hour. Hauling the same load, it has been propelled through four inches of fresh sand spread on the earth, turned around in the sand, dumped its load and then with only an eight-inch piece of timber as a bridge has mounted a rise of fourteen inches necessary to reach the paved portion of the street.

The power of the truck is estimated at 150 horsepower—it is actual horsepower, too, the inventor asserts. The tires are of steel, six inches wide.



WOOD'S TRUCK SHOWING METHOD OF UNLOADING.

Minister Beaupre, at Buenos Ayres, in his report to the Consular Department, states that a service of automobile cabs has just begun operations in that city. The cabs are all supplied with taxometres, and the fare is 21½ cents for the first 1,000 metres (3,280 feet), and 4½ cents for every 300 metres (984 feet) thereafter. Minister Beaupre believes that Argentina offers a good field for electric vehicles.

CLUTCH TENDENCIES

The Varied Efforts to Devise a Satisfactory Article and the One Definite Achievement.

From what has been done in the past nine months, or since makers generally revealed the secrets of their present year models at the shows, it is not a difficult matter to divine what some of the detailed features of next year's cars will be, and distinction in detail will of course be practically the only distinguishing feature of cars of the same price henceforth. It is not too much to say that by close observation of the general trend of affairs, coupled with a little personal experience and a judicious sounding of the views of others in a position to know whereof they speak, it is not necessary to know what is going on behind closed doors in the draughting rooms and laboratories of the factories to make some prognostications that will in the fullness of time prove to be more than generally correct.

Take the detail of clutches, for instance, and it must be admitted that it is rather an important detail at that, judging from its frequent treatment by the technical press. A very large part of the contributions are composed of symposiums on the gentle art of clutch manipulation. "How to use the clutch." Likewise just "How not to use the clutch." "How to reface a worn clutch." "What to do when the clutch suddenly and unexpectedly binds." All these of course refer to the most common type—the leather-faced variety of cone clutch, and by the same token most of them devote more or less time to the shortcomings of that same piece of mechanism. That the passing of this particular form of clutch is a certainty can be stated without fear of diverging from the truth, but that next year's shows will not mark its demise is equally true.

It is of considerable interest to glance back

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upon what the greater part of 1905 has brought forth in this respect, and from this retrospection can readily be determined just why the cone clutch will be a factor next year, though in considerably diminished numbers and sans leather in many more instances than otherwise. To take them up in the order of their importance, omitting any detailed reference to the host of experimental devices that have come and gone in that interval, it is probably well to give the prominence it deserves to the subject of the metal to metal clutch regardless of type. It is in this direction that the greatest amount of progress away from the old leather-faced cone is evident. First and foremost naturally comes the multiple disc. The principle of the device, which is the same in all cases despite the differing forms of its application, is too familiar to require comment or explanation, and it is further well known among those who have studied the subject that to take advantage of it requires a mechanism of considerable complicatioif that must at once be capable of delicate adjustment and positive operation through its comparatively short range at action. Its greater first cost is directly proportionate to its added complication and it surpasses the simple cone about equally in both respects. Yet there exists the seeming anomaly of some of the highest priced and some of the most inexpensive cars on the market figuring it as a standard part of their equipment. In both extremes it appears to have been productive of equally satisfactory results, and these are some of the instances in which a return to the leather-faced cone is a very remote possibility.

While it is, of course, subject to derangement, what mechanism, however perfect and simple, is not? Its ills differ with its nature and are in consequence not those to which its predecessor is subject. There is no facing to strip off, no binding, or, rather, jamming, as of the cone into the flywheel, to guard against, as the friction generated between a number of plates running in oil from which the latter must be squeezed out is relied upon to transmit the power. Its efficiency when properly designed and correctly constructed is, if anything, somewhat higher than that of the form it displaces, and on the whole its general behavior in experienced hands is such as to not only warrent its continuance by the makers who have already adopted it, but will doubtless insure for it new adherents. The fact that certain combinations of circumstances that cannot be foreseen nor guarded against will occur at times to derange it is not an argument against it, though the fact that repairs, when necessary, are of a more complicated and expensive nature, as well as its greater initial cost, will make it slower of adoption than did these drawbacks not exist.

But it has been conclusively shown that it is not absolutely necessary to resort to an aggregation of metal surfaces in order to obtain the holding effect requisite to prevent an undue loss of power, and in the evolution of a plain metal to metal clutch, not making any great departure in design from its leather-faced forerunner, the past season has been responsible for considerable development. Not that there has been a general adoption of this type, for the reverse is the case, but in those instances in which it has been employed the results have been such as to justify its continued use and to make its employment in increased number very profitable. There remains to be noticed the individual clutch, which also comes under this heading. For one reason or another its use has not been widespread, although builders who have adopted it as a standard part of their equipment have in most instances retained it without radical change through two or three seasons. But as compared with other systems the number thus using it has been very small.

In the numerous experiments made with a view to the evolution of something superior to the majority of forms now extant, by which must usually be understood the leather-faced cone, electricity has, as formerly, played a prominent part, and will no doubt continue to do so until inventors generally come to a realization of the fact that there exists the same serious drawback to its use as first made electrical ignition the bete noir of the builder. It has been shown beyond a shadow of a doubt that there is no inherent defect, either mechanical or electrical, that precludes the possibility of making use of the electro-magnetic clutch on the car, while that it is a form very much superior to some now in common use cannot be disputed. Numbers are in daily use in shops and factories where they have been found superior to older mechanical forms, the necessarily sudden starting and stopping of which proved detrimental to many forms of light machinery, while the current consumption is found to be so small as to form practically a negligible quantity. The same holds true of the current supply for ignition purposes on the car, but what a stumbling block it has proved to maintain that "practically negligible" quantity of current at all times need hardly be adverted upon. If it has proved so difficult to provide eight to ten amperes at six volts in order that the very engine itself may be operated, how is a source of supply of three times the output to be obtained without unduly overburdening the car with an electrical system? This is the shortcoming of both the electro-magnetic clutch and the speed change gear of the same nature that the numerous inventors working along this line have been blind to. Inability to provide adequate current and the danger of breakdown through its failure constitute at present an obstacle that renders further experiment in this direction unprofitable.

Recourse has been had to other forces in the attempt to evolve a positive acting clutch which would at the same time be susceptible to immediate and accurate control at the will of the operator, and of these hydraulic power has been the favorite. Several clutches of this kind have been produced, and while admirably simple and theoretically, at least, easy of maintenance and operation, it is not certain whether they form an advance over the simple friction cone. So far as is known none of them has progressed to a point where the confidence of a builder has been gained in their efficiency to an extent that warranted their adoption as a standard feature of his car's equipment.

Compressed air has likewise been experimented with, but strangely enough less has been done with it so far as regards its application to the solution of the clutch problem than any of the other expedients mentioned. This despite the fact that compression is most commonly resorted to on a large number of cars, both for the lubricating devices and the fuel supply.

On the whole, the multiple disc type of clutch apparently forms the one definite step forward that has been taken in this direction and its presence on at least several more makes of cars than at present boast it is a prophecy that will undoubtedly be verified by an inspection of the exhibits at the coming shows. The relative importance that this vital link in the transmission of the power from the motor to the road wheels bears to the remainder of the mechanism has frequently been underrated with consequent detriment to other parts of the car, chiefly the tires and change speed gears, although the motor is likewise a sufferer at times from the effects of improperly designed clutches. More often, however, the evil results are attributable to improper manipulation rather than to fault in the mechanism.

What has already been said on the subject of clutches has been particularly with reference to high powered cars upon which the use of a cone clutch of some form has usually been regarded as necessary, but it is noticeable that the widespread development of the light car has been responsible for a hitherto unthought of employment of the planetary type. Primarily this was regarded as only adapted for the transmission of small powers and its use was in consequence confined principally to the runabout. From the latter it was a natural step to the car which, though having not a great deal more power, was classed as a touring car, and from this its adoption in suitably enlarged form on cars having as high as 20 horsepower has followed. It provides smooth and easy running on the high gear which with a flexible engine can be used for practically everything but surmounting steep grades. Its use has accordingly become general, particularly with cars using the horizontal opposed motor, and as the latter has grown in size and power, the planetary gear has kept pace with it, so that it would not be surprising to note its use on cars of higher power next season than has ever before been deemed practicable.

In a French theatre recently, where a play was being shown in which a motor car played a more or less important role, a real gasolene machine was installed behind the scenes to furnish the required noise. Must have been quite a relief to an audience which had become used to the usual drum and sandpapered stick combination.

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CARS FOR SOUTH AFRICA

Market is Favorable but Present Vehicles are Unsuitable—What the Country Requires.

"The motor car and the motor lorry are now established and indispensable factors in South Africa's commercial and industrial economy, but although six years have elapsed since the introduction of the first car, the supply of mechanically propelled vehicles perfectly suited to South Africa's requirements does not appear to have been realized," according to A. T. Hennessy, chairman of the Automobile Club of South Africa, "but the manufacture of such a car has never even yet been attempted by home, European or American manufacturers, owing apparently to the fact that the South African demand for these vehicles, great and growing as it is, is still insufficient to warrant departures from standard patterns."

Passing in review the leading types of cars, Mr. Hennessy dismisses the electric as possessing no claim as yet to adaptability to South African circumstances, and concentrates attention on steam and internal combustion motors.

The use of steam cars in South Africa was, it seems, prejudiced in the early days by the introduction of cheap, light American steam runabouts, badly designed, constructed of inferior material and roughly finished, and with fuel and water capacity not exceeding twenty-five miles. A much better car has, however, since been placed upon the market, in which the boiler is replaced by a steam generator which instantly flashes the water into steam, while the control of the fire, water and oil is automatic. Condensers are also fitted and the mechanism of the car has been simplified and strengthened. Nevertheless, according to Mr. Hennessy, the steam car still falls below South African requirements for the following reasons: Storage capacity for water and fuel is too small; the machinery occupies more space than that of a gasolene car, thus seriously reducing available room on the car; it is also more complicated than that of the gasolene car, and is more likely to get out of order, the pilot light especially giving trouble. Running costs are also greater than with an equal power gasolene car. In the steam car's favor are, however, its reserve of power, ability to use common gasolene, etc., which will, Mr. Hennessy allows, always insure it a considerable patronage with motorists acquainted with its merits.

Mr. Hennessy's comments on internal combustion motors relate solely to gasolene cars, and they are, like those on the steam cars, dictated solely from the standpoint of South African requirements. In the main, the defects alleged are less those of construction and material than of design. While the respective merits of low or high speed engines may remain a debatable point, experience favors the medium for South African conditions, as being more economical, giving less vibration and less wear on the wearing parts and bearings, combined with greater efficiency. In the matter of single or multiple cylinders, with a car over 6 brake horsepower the multiple cylinder gives the best results, being better balanced, producing less vibration, running quieter, yielding better hill climbing power and less wear of wearing parts. These offset the objections of complication of parts and duplication, as increased reliability and freedom from breakdown are insured. Separate cylinders, as offering larger cooling surfaces, so needful in a semi-tropical climate, are likewise preferable; while, on the other hand, mechanically operated inlet valves are inferior to the automatic, owing to difficulty in obtaining spares in the case of a breakdown. As to cooling arrangements, those of cars introduced to South Africa hitherto have, with but few exceptions, proved totally inadequate. Climate, steepness of hills, need for constantly pulling up to negotiate the innumerable sluice and streams that cross the country roads—all combine to overheat the engines; hence the need for fitting South African motors with larger water tanks, more efficient radiators, with larger fans and, in many cases, more powerful pumps, these last being gear driven in preference to either belt or friction driven.

According to Mr. Hennessy, the parts of motors which offer the greatest scope for improvement, so far as South African use is concerned, are those connected with the transmission and running gears. The clutch, in particular, should be made so as to operate very gradually, and if capable of sliding indefinitely without undue wear would add immensely to the life of the car and the comfort of the occupants. The cone shaped leather faced clutch, which is the one most general in South Africa, is held to be the most unsuitable that could be devised. On the other hand, the metal-to-metal internal expanding clutch, which gives no end thrust, is held to be the best for the average motor. Commendation is also accorded to the Hele-Shaw clutch, as it prevents the engine power being suddenly or fiercely applied to the gear, and allows of its slipping without injury to working parts. For the rest, the cog wheel type of gear will remain superior to the crypto gears, so long as the latter continue unimproved, on the score of durability. In the matter of speeds, all cars over 6 brake horsepower should be fitted with four, as on South African roads it is desirable that change of speed should be as gradual as possible, while a direct drive on the top gear is not of such paramount importance unless effected without interfering with the efficiency of other gears. In South Africa low gears are of as great or greater importance than the high, and the best form of gears is undoubtedly the cardan shaft bevel gear and live axle, its advantages being noiselessness, full protection of working parts and easy lubrication. In few cases, however, Mr. Hennessy declares, has this shaft been found sufficiently strong for South African work, either the whole shaft twisting or the jaws breaking. The design of the live axles also leaves much to be desired, they being seldom strong enough for the work. An ideal axle is one having an ordinary axle to carry the weight of the car and two cardan ones to convey the power to the road wheels.

The springs fitted to motor cars for South African use, as also the means of lubrication, are equally open to exception. On the latter point is is declared that sufficient attention has not been given by manufacturers to the efficient lubrication of all bearings from the dashboard. Sight feed lubrication is generally fitted to the principal bearings, with force pump to the cylinders; but, if fitted at all, there should also be a pump capable of forcing oil to all bearings. The best form of pump is an automatic pressure one, with a hand pump as a standby, as all other pumps are too easily affected by changes of temperature and gritty matter in the oil. In the matter of springs, their vital importance, owing to the state of South African roads, can hardly, it is affirmed, be realized by motorists or manufacturers at home. Those fitted by the average maker are seldom strong enough; and it has been found very difficult to make them so without seriously interfering with their resilience and the consequent comfort of the car. But the increased length of wheel base which has recently become general leaves the way open to fit longer springs, with greatly increased comfort in running.

As previously stated, the increased length of the wheel base is a factor conducive to effective springing. Other points connected with the wheel base are that, for comfort, all seats, back as well as front, should be placed between and inside the base, as, if they overhand the back axle discomfort must be felt by the riders in passing over bad roads. Increased clearance must also be allowed for beneath the car. In this particular all European models entirely fail to meet South African requirements, their bodies not being raised sufficiently from the ground to clear road obstacles. Moreover, in many districts the centre of the highway is from five to twelve inches higher than the sides, which makes it impossible for a car with only five-inch clearance—the maximum clearance of many cars—to proceed on them. For the same reason it is also a serious error of construction to make the flywheel the lowest point of the machinery, and the minimum should be the bend of the front axle. The dust nuisance, as has been previously pointed out at home, is also mitigated by the increased clearance.

Well designed worm and segment wheel steering gear, which is almost universally fitted to 8 horsepower cars and upward, is regarded as the best type of steering gear; but exception is taken to the otherwise excellent tiller steering gear of a unique type made by one well known English firm, because of its liability to be diverted by road obstacles and its dangerously ineffective control in deep sand. Some of the castings which carry the pillar, worm and segment of gears in many machines have also exhibited defects in use. In the matter of size of wheels, uniformity for all cars constructed for South Africa is requisite in order to reduce the storage room needed for spare tires; and with regard to wheel diameter, forty inches is a satisfactory size for cars of 10 horsepower and upward. If smaller they take from the comfort and smooth running of the car, and if larger they cannot be made strong enough to stand the lateral stress. The artillery type of wheel has proved itself most suitable for South African roads, while the wooden wheel is easier to clean and smarter looking than the wire ones, and is also held by Mr. Hennessy to be more lasting. In the matter of gearing, nearly all cars imported into South Africa are geared too high for the road conditions, and many of the smaller cars have not sufficient power for their seating accommodation.

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CONTROLLING THE CHAUFFEUR

Regulations that are in Vogue in France and Some of their Shortcomings.

There exists in many quarters a burden of opinion that the only really successful issue of the much discussed chauffeur problem lies in a complete and comprehensive system of examination and license, whereby only those who are qualified according to certain well defined standards shall be permitted to handle an automobile as professional drivers. The principle already has been put into effect in the rather lax and weakling regulations of certain of the American States, and in several foreign countries as well, notably in France, where a very complete system has been worked out.

Undoubtedly the best proof of the pudding is in the eating, and no better argument, pro or con, can be obtained than is given by the actual way in which an idea works out in practice. Hence, the following extract from an article by Louis D'Hurcourt in Le Temps, showing how the typical French chauffeur is made, is particularly instructive.

"How does a man become a chauffeur today?" he says. "Usually in the following way: A young man out of work or without any visible means of support says to himself: 'Go to. I will be a chauffeur.' He has a few coppers in his pocket, and he buys a cap and the usual leather toggery and presents himself at an automobile garage, where he unbosoms himself of his intentions. For, and in consideration of, $30, the people at the garage undertake his professional education. That is to say, they let him get into an automobile and go around the fortifications with it. This they do for several days in succession, and they teach him the most elementary notions regarding the trade. After this he hies himself to the prefecture to pass his examination and obtain his permit to drive a motor vehicle in the public streets.

"The green chauffeur addresses to the prefect a request on printed paper for his certificate of ability. This request must be accompanied by a statement telling where he lives, by two photographs of himself and by certain other proofs of his identity. The prefecture transmits the request to the Minister of Public Works (Service des Mines), and an engineer of the Mines must put the youngster through his examinations. In the provinces things go the same way, the prefecture of police being naturally replaced by the prefecture of the department.

"The Service des Mines, having received the request, must then see that the candidate passs his examination before the engineer. In actual practice, the engineer of the Mines, having almost always something else to do, delegates his functions to a controlleur, or a vehicle in the public streets. . . .

"As the administration has no material especially reserved for these tests, it is incumbent upon the candidate to present himself with an automobile, either his own or a rented one. The examiner sits beside him and makes him drive the motor, meanwhile telling him where to go and how fast, and assuring himself according to the terms of the decree that he knows how to steer the vehicle, that he understands the mechanism, and that he possesses the required sang froid to manage it in the midst of the difficulties of crowded thoroughfares like those of Paris. Note this point, which is the weak spot in these examinations. We shall come back to it presently.

"This test, necessarily of brief duration (since, in 1902, for instance, the special inspector of Mines had to deliver 4,000 permits), is finished, and if it ends gloriously for the candidate, as it almost invariably does, the Service des Mines presents him with a conditional certificate of capacity, good for one month, and giving him the right to drive a machine in the public highways from that moment forward till the certificate runs out of date.

"The inspector transmits to the prefecture a statement of the registration together with one of the photographs. A month later—and without any new test—the officers of the prefecture of police, after being scrupulously assured of the candidate's identity, give him his official certificate gratuitously. He is now a chauffeur.

"Here, again, the inspector of the Mines has proceeded as seriously as it is possible for him to do under such trying circumstances. He even takes the precaution of mentioning upon the certificate of capacity the species of vehicle (with the maker's name and horsepower) which the candidate is qualified to drive. . . .

"No inquiry is made into the moral character of the candidate, nor even into his registration by the police, nor is a medical examination so much as suggested. The candidate may be a dipsomaniac, for instance, or subject to fits, or he may have some serious trouble with his eyes, and yet no objection is raised. Pray note that it is certainly more difficult to drive an automobile through the traffic of Parisian streets than to run a locomotive that cannot leave its rails.

"How, under these conditions, can the examiner really assure himself that the candidate possesses the sang froid and the intelligence necessary to prevent his becoming giddy when going at high speed, and to prevent his bringing about a splendid series of accidents? He may appear quite calm during the brief official test; in fact, he can hardly do otherwise, however scared he may inwardly be, when a high official is sitting beside him in the carriage.

"But, once turned loose and made his own master, what is going to happen if he has the drink habit or if he has an exceptionally violent nature? Now, observe that in the present state of things the certificate of capacity can be given to a young scapegoat and brawler or to one of those terrible youngsters who have already been several times sent to jail for drunkenness and assault and battery. The prefecture is not authorized by the term of the decree to examine the police registers except in the case of drivers of automobile cabs. But the drivers of private automobiles are hardly less dangerous to the public and to their masters themselves. 'We are not an employment agency,' said one of the officers at the prefecture when I spoke of these things. 'It rests with the employers of chauffeurs to assure themselves of the morals and antecedents of the men they hire. To search the police register every time a candidate applied would be a vexatious and a humiliating measure.'

"The lack of information regarding the chauffeur's morals naturally involves the gravest embarrassment. It is impossible to prevent them from taking the machine out of the garage and going on excursions of their own with it, unknown to their masters. Those who are not particularly conscientious and who have already acquired bad habits spend the night in roisterous company, and many accidents result. The owner can get no redress from a penniless employe; he must pay for breakage and repairs, and then swear if he likes to ease his temper. He dismisses the chauffeur and begins over again.

"There are no effective administrative measures to remedy this state of things. To be sure, there is an article in the police rules which says: 'After two violations of the law within a year, the certificates of capacity delivered in virtue of Artcle 2 of the present rules can be withdrawn by order of the prefect and on the advice of the Service des Mines.' But in actual practice this article is almost a dead letter.

"In the early days of automobilism chauffeurs thus recruited were almost invariably mechanics who had at least the professional qualities of the Parisian workingman and were capable of quickly deducing the causes of a breakdown and the means to remedy it. They had also the defects of the slum population, its lack of reverence for anything, its passion for idling and its weakness for the little glass. Many owners soon wearied of this sort of chauffeur and had their valets or their coachmen taught to run the motor. This was an especially good use to make of the coachman, who had little or nothing to do since the motor came into use. From the moral point of view this type of chauffeur was generally excellent. It is reasonable enough that a servant of sound character and good training should handle the wheel as well as the reins.

"But the remedy worked only in the case of owners who had already their men servants. A man who has decided all at once in consequence of falling heir to a fortune to buy an automobile cannot think of first taking a servant and then transforming him into a chauffeur. He prefers to get a qualified automobile driver, and there ore betakes him to some garage or other where a chauffeur is given him, good or bad it doesn't much matter, and generaly without any guarantee as regards his morals."

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HIS TUNING UP TALE

Which Illustrates What Comes of Rush Work in Factories and Clamor for Cars.

"There are bunglers in the business of automobile building just as much as in any other line," vouchsafed the disgruntled one, "and let me tell you," he added confidentially, "unless some of them reform there will be vacancies."

"Are you still feeling put out over your experience with that car you bought last spring" asked the recipient of his tale of woe.

"Wasn't it enough to make an angel say things unfit to print? And my case wasn't the only one that happened. It might be put down as due to unavoidable oversight, if it only happened once in a season. I happened to be introduced to a new member of the club a week or two back and over a little refresher we fell to comparing notes. He had been taken in just about the same as I was. If you change the names, his story would fit my case, with this rather important difference, however. Being endowed with a somewhat better lined pocket he gave up his first love in disgust and sold it to a second-hand dealer before the end of two months. But not before he wrote the maker and told him what he thought of him. You can wager your last cent at 1,000 to 1 that that letter will never be published as an unsolicited testimonial.

"Why, you would scarcely believe it possible that a maker that advertises broadcast, sells his cars all over the country and enters them in races with more or less credit to their name, could last more than a single season if he let all of his product leave the works in such a condition of unfitness."

"Oh, it may have been nothing more than a coincidence that two cars should have been sent out that way and be sold in the same locality," was interjected. "Then, again, factory management changes sometimes and you may have been the victim of some incompetent."

"Coincidence nothing, though there's no doubt about the victim part of it. If there were only a few things wrong about the old wagon it might be put down to defective material that will sometimes find its way into the best piece of machinery made, but the whole thing is simply thrown together. Given the materials I'd back my sixteen-year-old boy to make a better job of assembling than that car represents to-day, and as for design, well it's all in the looks. I think a good many of the fittings, such as bolts and nuts, were never calculated for the purpose at all; you could buy them at any corner hardware store.

"Now you're too rough on the car, altogether," was commented. "You really haven't had so much trouble with the car once you got her tuned up, but you can't see anything good about it any more. Take Robbins, for instance. Could any mortal have more ill luck with a piece of machinery than he? You have had a great deal of satisfaction since the process of getting things in trim was done with. It's my opinion the manufacturers ought to charge you for the experience; you know how to get a car out of a tight place better than most of us now. Probably that was included in the cost of the car, and if the maker were marketing them all tried out, he'd add another five hundred."

"It cost me all of that. I'll confess I have had considerable satisfaction out of the machine, but you must admit I had no easy time getting her broken in. Take my first adventure, for instance. I drove the car myself as soon as I got it from the agent, and he told me it had cost him almost a century to get her in condition to deliver. He must have worn out the clutch facing in the process and put in a new one which I don't believe had ever been tried. He spent three weeks getting her ready, so I suppose he was more than glad to be rid of the job. Whatever had been worn out in the process of breaking in was replaced with new and then let severely alone for the looks of the thing.

"The clutch leather was one of the replacements, and it was only the allseeing eye of Providence that guards inebriates and children from harm that it did not make a subject for a sitting of the coroner of me, leaving a suit for damages at the same time. The maker was way behind on deliveries in the first place, and with the first balmy spring weather I pestered the life out of the agent to hurry the car along, for I was a new hand at the game and was simply crazy to get behind the wheel. I thought of it by day and dreamed of it by night, until my wife thought I was going into a decline and I all but lost my job through the asinine mistakes I made. The agent received the car, but found it needed so much tuning up that he wouldn't deliver it and didn't let me know he had it. His life was a burden to him if he had many more like me after him, for what with letters, telephone messages and calls I kept him on the jump, making excuses for his principal, who according to my reckoning was almost three months behind his promised date of delivery. There's an end to everything of course, and one Saturday the agent 'phoned me that the car would be ready for delivery that afternoon.

"We started off for a spin in the new acquisition—wife, family and all the relatives the car would hold—immediately after lunch. That is, one of the agent's men cranked the car until the engine turned over and then I tried to exhibit my skill in driving. We certainly made a fine getaway. With the motor well speeded up I pushed down on the clutch pedal and tried to shove her into first speed in good style, and I put plenty of heft into the lever as I put it forward. With a regular rip roaring crash of gears that sounded as if the entire inside of the gear box had gone to pieces, she jumped ahead as if struck by lightning, all but distributing the entire party over the roadway. If it hadn't been for bucket front seats and a high backed tonneau that is what would have happened. My wife and mother-in-law were sour as vinegar the rest of the afternoon from the terrific bump they got. My word for it, was a tooth racker. Worse yet. I all but annihilated a nurse girl with a baby carriage, but just missed them by giving the wheel a yank that sent us flying straight for the opposite curb. With the other hand I jabbed at the spark and shut her off and locked the brake with a suddenness that brought us to dead stop plump across the car tracks in front of a car going at full speed. The women all shrieked, men on the curb yelled and the motorman, after effecting a grand stand finish that brought the car to a stop within a foot of us, swore and glared at me. The agent's whole force swarmed into the street and pushed the car back to the curb it had started from, and the women folks decamped right then and there, both my wife and mother-in-law vowing that they would never go near one of the things again and were sure that I would be brought home dead before the afternoon was over. As things turned out it wasn't my fault the prophecy didn't come true.

"Well, after things quieted down a bit and the crowd had faded away, the motor was started again, and the agent, fearful of having a wreck in front of his place, politely suggested that he had better give me a pointer or two. I was actually too frightened to resent the inference of my lack of driving knowledge, and gave up the wheel without a protest. He handled things very gingerly, but in spite of that we seemed to jump a hundred yards the moment he let the clutch in—the way it took hold was something fierce. We seemed to jump a hundred yards in a bound before settling down, but then she slid along smooth as you please, and Mr. Agent thought he had made good and got out after we had gone a few blocks up along the parkside. My young boy was still with me, and when I climbed back behind the wheel he sat down alongside, still pretty well scared, I could see. It was with considerable misgiving that I went through the motions, but catching a clear space in the traffic I put the change speed lever home and released the clutch pedal. My heart came into my mouth at the jump she made, but we managed to get away without knocking any one down or smashing everything, and went along on the slow speed. My experience up to that time had been such that I would have been only too willing to let things alone, but it is far from satisfying to sit in a big car with the engine speeding and the car making about ten miles an hour, while everything on the avenue whizzes by with a hum, so I decided to try the high. I put my whole weight on the clutch pedal, and waited till I thought everything was quiet before shifting, never noticing that the car continued to move right along in spite of the fact that I was pushing down on the pedal for all I was worth. When I thought the psychological moment had arrived, I hauled away at the lever to get past the intermediate onto the

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high. The crash that followed will ring in my ears till my hundredth birthday. It certainly speaks well for the quality of those gears that there was anything left in the change speed box after I got through that day. The new facing on the clutch was such a good fit that it didn't allow any clearance at all, while the pedal was so poorly adjusted as to allow of considerable movement that gave the impression that the clutch was out.

"We hardly got a mile and a half on our way up the avenue before we met our fate in the shape of a delivery wagon that cut across from one side to get into one of the transverse roads through the park, and the inevitable, aimlessly wandering nurse girl and her charge coming out of it. There was mighty little margin between our speed and twice the legal limit and things certainly looked interesting for half a minute. I stamped on the clutch pedal without the slightest effect—stood up on it almost, and jammed on the emergency brake. The motor was going pretty fast, so there was a fuss for a few seconds until I shut off the spark. We didn't hit anything, but the closeness of it gave me nervous prostration almost. Then we were dead in the midst of the traffic, so the boy jumped out and got her going again and she did her rearing stunt, just as a hansom came out of the park in front of us on the run. I wrenched the wheel over; we all but annihilated a policeman, tried to climb a lamp post on the corner, and I finally killed the motor again in time to avert a disaster. That was enough for me. As soon as I had succeeded in smoothing down the cop's ruffled feelings I made for the nearest drug store, got an ammonia cocktail for my nerves and telephoned the agent to send a man for the car. And we didn't go back in her either. If he had sent a man up to run her back I had made up my mind to give him a cigar and wish him luck, but he sent another car to tow her down, and my boy went along to do the steering while I started for home completely tuckered out.

"It was nothing short of a miracle that we didn't end up either with a fatal accident or a wrecked car that afternoon. The credit certainly belongs to my discretion in giving up so early in the game, for a few more shys at it such as we had, and things must surely have been messed up. Well, the agent put in the better part of the week on that clutch and pedal and next time it worked all right. But that was merely one experience not covering more than an hour from the time we left the garage until the car was towed back in disgrace. My experience with that car in the first three or four months I had it would fill a fair sized volume, and I can't recall one of the instances in which something went wrong, and several of them resulted in a tow home, that it wasn't due to lack of adjustment that could have been avoided if it had been properly attended to at the factory. For instance, the car drive shaft pulling apart at the sliding joint—that was the result of a piece of carelessness that left us perfectly helpless five miles from a repair shop with everything else about the car in perfect running order. Then another time a toggle bolt dropped out of the rear off spring on a dark night, and the way the tonneau listed and banged up and down on the spring was enough to make you think the car was falling to pieces. But then again it shows what good material was put into the car, for otherwise, the frame would have been twisted all to pieces with the strain of a full passenger list in the tonneau and going full speed over a rough road. A little straightening and it would be impossible to tell that anything had ever happened to the frame. But why bore you with details, there wasn't a time we went out that something didn't loosen up or drop off, until we had finally arrived at a stage where we had secured everything on her. Never again for me, though. The manufacturer does the tuning up on the next car I buy."

Austria Increases the Limit.

According to the new law promulgated in Austria and Hungary, all cars must be publicly examined before use, and must carry identification plates. In open country a maximum speed of 45 kilometres (28 miles) an hour will be permitted, reduced to 15 kilometres (9⅜ miles) in towns and villages. It is further provided that in all thoroughfares in which there is heavy traffic the speed must not exceed six kilometres an hour, while on bridges, in narrow streets, at crossings and in foggy weather it is forbidden for motor cars to pass any preceding vehicle. Just how they are to make progress under such circumstances is not made plain.

Geneva Advances a Claim.

It is a curious fact that in Switzerland, where chauffeurs by no means move in an odor of sanctity, the greatest number of them in proportion to the population is to be found, says La France Automobile. At least, this is true of the canton of Geneva, where 381 automobiles are registered and 424 motorcycles. This represents, then, more than 800 motor vehicles, as against a population of scarcely more than 100,000 souls. This figure is not to be surpased anywhere; it is greater by 50 per cent than that of other localities, either in Switzerland or elsewhere, where are found a greater number of chauffeurs.

When the Car Ran Away in Cork.

An amusing anecdote of a runaway motor car is going the rounds, which is attributed to the city of Cork, whose St. Patrick's Hill is called the steepest in all Ireland. It seems that a local physician left his car, a light runabout, about half way up this hill the other day while visiting a patient, and that as it lay close up to the curb a couple of lads began to investigate the uses of the various levers, with the ultimate result that they let off the brake and turned the car adrift.

Starting on a mad career down the incline, it first narrowly missed a horse and cart which were crossing an intersection at right angles to its course, and then proceeded by a series of caroms, first striking a railing, then an electric light pole, and finally a second pole, which it broke short off, overturning at the same time. A "bobby" who attempted to do things to it in its flight got a button of his coat entangled in the bracket of the tail lamp and went along with the parade, clinging to the seat to avoid being dragged in the street. The crowd which had gathered to witness the antics of the owner was considerably astonished to see him straighten out a lever or two after they had helped him to right the machine, adjust the cushions and ride off as though nothing uncommon had happened.

The Meeting of the "Graduates."

This is the conversation overheard the other day at a football game:

First Stranger (to second stranger, beside him)—Ah, these practice games in the early fall! How they remind one of his own college days, when he sighed for a position on the team!

Second Stranger (replying to first stranger)—Yes, they certainly awaken fond memories. What college do you claim as your alma mater?

First Stranger—Why, I graduated from the automobile branch of the evening school of the Bugsville Y. M. C. A. And what, may I ask, was your college?

Second Stranger—Oh, I received the degree of B. G.—Bachelor of Gasolene, you know—from the Correspondence School of Motoring.—(Ex.)

Would Arrest the Car.

At the present time the English motorphobe is far more virulent than his American confrère, though there is no telling how long the supremacy may last. The other day the town constable of Folkestone suggested to the watch committee of the Town Council that "magistrates should have power to suspend or revoke licenses to drive for any offence connected with the driving of a motor car; also, in serious cases, to revoke the registration of the car or to order the car to be impounded for a stated period, and to order the defendant to pay the costs of the car being stored." Quite an idea, that of arresting the car!

Special Counsel for St. Louis Motorists

So great has become the activity of the police of St. Louis, Mo., in the matter of arresting violators of the speed law, that the members of the local automobile club, at a recent meeting, decided to appoint special counsel to look after members who might fall into the toils. The action was a result of the action of the local authorities in appointing a number of special deputies to watch the principal roadways leading out of the city.

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The New Model 1906

Rainier

30-35 H. P.

What is the automobile buyer going to do when he is strenuosly told that each and every one of the 1906 cars is THE BEST CAR IN THE WORLD?

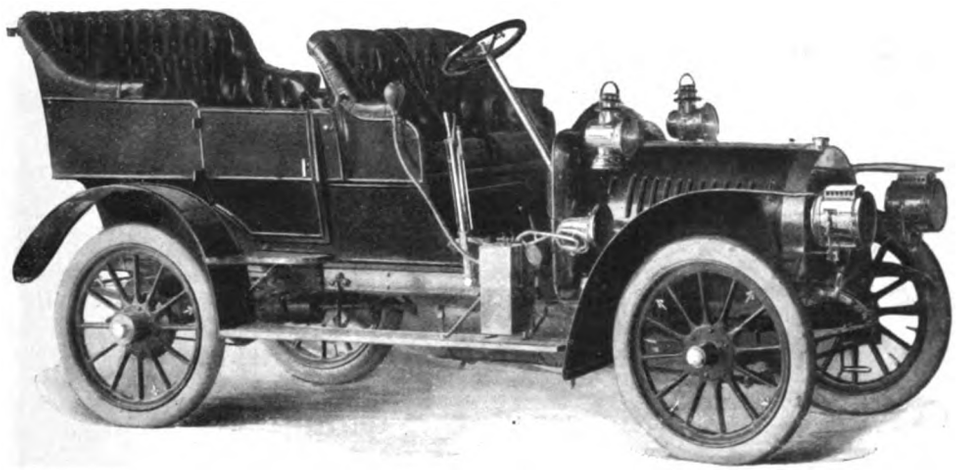
He is going to do a little investigating.

He is not going to be attracted nor distracted by the whirlwind of words with which one car after another comes before the public on paper.

When he gets down to business, he will find the RAINIER in the front rank of cars that have won renown and made fast friends by actual achievement. He will find that in every inch of metal and wood, in every working part, in every line, the Rainier as it will take the road in 1906 is the very embodiment of strength, compactness, lightness and beauty —now more than ever before "The Pullman of Automobiles."

We want good Rainier agents in all unassigned territory. We can give them a car to sell that WILL sell, and that will make a new salesman of every purchaser. We stand back of the Rainier with the broadest and most liberal guarantee ever given.

Correspondence invited.



ENGINE.	30-35 H. P., 4 cylinders, water cooled.	**VALVES.**	Mechanically operated, inlet and exhaust interchangeable.
IGNITION.	Sims-Bosch Magneto—make and break spark.	**CARBURETTER.**	Float feed, requiring no adjustment.
TRANSMISSION.	Sliding train. 3 speeds forward and one reverse.	**BRAKES.**	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
REAR AXLE.	Bevel gear drive, clutch driven hub. Ball bearings.		
FRONT AXLE.	I Beam section. Ball bearings.		
FRAME.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.		
WHEEL BASE.	104 inches.	**BODY.**	Full aluminum, double side entrance.
WHEELS.	Imperial whalebone, grade A 2nd growth hickory.	**EQUIPMENT.**	Two head lights, 2 side lights, 1 rear light, 1 horn.
TIRES.	Continental 34 x 4.		

Price, $4,000.

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinder—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body

Price, $3,500.

BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for November and December delivery.

THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Boston Agents: MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.

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1,000 Miles Without a Single Adjustment

won the Glidden Trophy for the

PIERCE

There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads—the Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

THE GEORGE N. PIERCE COMPANY,
Buffalo, N. Y.

Members of Association of Licensed Automobile Manufacturers

Manufacturers of Pierce Cycles.

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The Week's Patents.

802,611. Wheel. Charles B. VanHorn, Philadelphia, Pa., Assignor of one-half to Elijah B. Cornell, Philadelphia, Pa. Filed May 20, 1904. Renewed March 30, 1905. Serial No. 252,920.

Claim.—1. The combination with an axle spindle sleeve, of a hub comprising an axle box mounted to rotate on said sleeve; conical surfaces at the opposite ends of said sleeve, conical wedge rings fitted to said surfaces in said sleeve and arranged to engage an ordinary vehicle axle spindle therein, and a nut arranged to shift said rings relatively to said sleeve and clamp the latter in stationary relation to said axle, substantially as set forth.

802,643. Vehicle Wheel. Charles E. Huxley, Chicago, Ill. Filed January 6, 1905. Serial No. 239,910.

Claim.—1. A vehicle wheel comprising a hub, a surrounding flexible rim composed of a plurality of curved jointed sections formed to provide on their outer sides an angular seat for a tire, and pneumatic means connecting the rim with the hub constructed to normally maintain the rim circular while permitting said rim to yieldingly flex inwardly.

802,665. Explosion Engine. Richard H. Scott, Lansing, Mich., Assignor to The Olds Gasoline Engine Works, Lansing, Mich., a Corporation of Michigan. Filed March 28, 1904. Serial No. 200,313.

Claim.—1. In an explosion engine, the combination with an explosion chamber, of a water jacket for the chamber, a supply port means for introducing the explosive mixture therein, and means within the jacket for simultaneously injecting water from said jacket directly into said supply port in the path of said mixture and adjacent a heated portion of said explosion chamber.

802,703. Tire Fastener. Thomas Midgley, Columbus, Ohio. Filed December 22, 1904. Serial No. 237,897.

Claim.—1. The combination with a tire, of a seat for the same having a plurality of parts adjustable toward each other in the operation of securing the tire to the wheel, and a wedging ring adjustable in length, adapted to force the said parts of the seat toward each other for securing the tire in position as set forth.

802,735. Pneumatic Tire Protector. Pierre O. Casavant, Point St. Charles, Canada. Filed October 26, 1904. Serial No. 230,007.

Claim.—1. In a protecting device for pneumatic tires, a serrated sheathing having radial, integral, lips, a chain approximately concentric with the inner ends of said lips, radial links connected with said chain, and means for connecting said lips with said radial links.

802,768. Rotary Engine. William N. Mears, Brookline, Mass. Filed February 13, 1905. Serial No. 245,341.

Claim.—1. A rotary engine comprising a casing, a cylinder eccentrically mounted therein and forming with the inner walls of said casing a chamber the area of which gradually increases from the inlet, then remains the same for a distance, and then gradually increases to the point of exhaust, pistons carried by the cylinder in contact with the walls of said casing and forming closed pockets therewith, an admission port opening into the narrowest part of said chamber, and an exhaust port opening into the widest part of said chamber.

802,798. Antifriction Bearing. Henry C. Burnett, Fort Maginnis, Mont. Filed March 25, 1904. Serial No. 199,933.

Claim.—1. In an antifriction bearing, the combination with a hub having a plurality of lugs, a spindle mounted within said hub and bearing elements secured to said hub and provided with lugs adapted to register with the lugs on the hub, said bearing elements each having a ball race, of balls within said races, flanges carried by the spindle adapted to engage said balls, one of said flanges being removable, retaining rings for said balls provided with a dust guard adapted to overhand said spindle flanges and having lugs adapted to register with the before-mentioned lugs, and bolts engaging all of said lugs adapted to hold the component parts in their relative positions.

802,806. Wheel Tire. Henry G. Fiske, New York, N. Y., Assignor, by mesne Assignments to Morton Trust Company, trustee, a Corporation of New York. Filed April 24, 1899. Serial No. 714,160.

Claim.—1. A single piece inflatable tire having a tubular fabric substantially concentric with the circular outside surface of the tire, and having an inner tubular portion the section of which shows a laterally contracted tube, the major axis of which is arranged transversely of the tire, a body of flexible, pucture resisting material between the upper part of the tubular portion and the tread, and a similar body of puncture resisting material oppositely disposed thereto.

802,828. Rotary Engine. Norman R. Smith, Seattle, Wash. Filed April 3, 1905. Serial No. 253,653.

Claim.—1. A rotary engine comprising a cylindrical casing, a rotatory head having peripheral lobes and mounted to turn in said casing with its lobes in contact with the inner periphery thereof and abutments arranged to swing in pairs upon and at opposite sides of a common center and continuously engaging the periphery of said rotatory head.

802,833. Acetylene Gas Generator. Martin Thayer and Jonathan E. Reynolds, Wareham, Mass. Filed October 12, 1904. Serial No. 228,148.

Claim.—1. In an acetylene gas generator, a hopper for the carbide, a valve consisting of a series of substantially parallel fingers projecting across the outlet from the hopper, and means ofr producing a longitudinal movement of said fingers in a direction transverse to the vertical axis of the hopper to control the gravity feed of the carbid from the hopper.

802,843. Rotary Engine. Clarence M. Cornelison and William B. Matlack, Mahafley, Pa. Filed May 10, 1905. Serial No. 259,745.

Claim.—A rotary engine comprising a cylinder having its bore opening through its ends, said bore being bounded by oppositely directed concentric arcs of different radii the ends of said arcs being connected by two portions one extending radially of the arcs and the other extending at obtuse angles thereto, said cylinder having an inlet passage opening through the first named of said connecting portions and an outlet passage opening through the other connecting portion, plates secured against the ends of the cylinder and having aligning openings therethrough said openings registering with the lesser arc, said plates having flanges extending into the openings at the outer portions thereof, brackets carried by the plates a shaft journaled in the brackets and extending through the cylinder, members mounted upon the shaft and lying in spaced relation to the inner peripheries of the flanges and within the inclosures thereof, expansible packing rings engaged with the members and lying within the inclosures of the flanges, flanges carried by members at the inner ends of the latter and lying within the openings of the plates and against the inner faces of the first named flanges, a piston including spaced sections secured at their ends to the inner surfaces of the members said piston lying in engagement with the inner wall of the cylinder which follows the lesser arc and lying in spaced relation to that portion following the greater arc, and a member slidably engaged between the sections of the piston and lying with one of its end portions in the space between the piston and the portion of the cylinder following the greatest arc with its extremity in engagement with said portion, said end portion of the member being adapted for engagement of the second named connecting portion of the bore of the cylinder for movement of the member to project its opposite end portion beyond the piston.

802,860. Vehicle Spring. Adolf Herz, Vienna, Austria-Hungary. Filed April 14, 1905. Serial No. 255,533.

Claim.—1. The combination with a vehicle spring of means for retarding the compression of the spring with one degree of friction and another means for retarding the expansion of the spring under another degree of friction.

802,905. Tire Inflating means. Gabriel A. Bobrick, Los Angeles, Cal. Filed May 31, 1904. Serial No. 210,386.

Claim.—1. Means for inflating tires comprising a tank for holding gas under pressure, a valve connected thereto, a reducing valve, a flexible tube and a coupling adapted to detachably connect with the valve of the tire and a valve between the reducing valve and the tire valve.

802,907. Nut Lock. John T. Boyet, Lewisburg, Tenn. Filed March 7, 1905. Serial No. 248,843.

Claim.—In a nut lock, a longitudinally grooved bolt, combined with a nut having a radial slot in its face extending from the bolt hole to its periphery, and a hole through the bolt near said corner, a dog in said slot angularly disposed thereto, and a pin passing through a hole in the dog and the hole in the nut, the ends of said pin bent to prevent its withdrawal.

803,006. Flexible Coupling. Joseph B. Meriam, Cleveland, Ohio, assignor to The Bruce-Meriam-Abbott Company, Cleveland, Ohio, a Corporation. Filed March 6, 1905. Serial No. 248,385.

Claim.—1. In a flexible coupling, in combination, a driving member, a driven member, a series of flat leather links placed in a circuit with overlapping ends, bolts passing through alternate ones of such overlapped ends into the driving member, and bolts passing through the remaining ones of such overlapped ends into the driven member.

803,008. Motor-Vehicle. Herman P. Moorrees, New York, N. Y. Filed October 6, 1905. Serial No. 227,336.

Claim.—1. In a motor-vehicle, the combination of a steering shaft or pillar, steering mechanism operated thereby, an electrically controlled friction-check co-operating with said shaft or pillar and comprising an electromagnet and parts directly acted upon thereby to vary the frictional contact thereof, and means to open and close said friction check, substantially as described.

803,009. Motor-Vehicle. Herman P. Moor-

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rees, New York, N. Y. Filed February 24, 1905. Serial No. 247,084.

Claim.—In a motor-vehicle, the combination of a frame having longitudinal members and transverse members, bearings carried at the ends of said frame and by said transverse members, means to secure said frame to the body of the vehicle, independent axles mounted in said bearings, driving-wheels carried by said axles, motors secured to said transverse members, and transmission-gearing between said motors and said axles respectively, substantially as described.

803,011. Tire for Vehicle-Wheels. Charles Motz, Akron, Ohio. Filed January 3, 1905. Serial No. 239,529.

Claim.—1. In a vehicle-tire, the combination with the undercut channelled rim, of the elastic tire having projections adapted to fit said channelled rim, and provided with a series of transverse bars or stays, alternately arranged, having one end of said bars terminate under the inturned flanges of the rim, and the opposite ends thereof terminate above the inturned flanges of the rim on opposite sides; substantially as described.

803,032. Valve-Actuating Mechanism for Explosive-Engines. Lorenzo D. Toliver, Abilene, Kan. Filed December 13, 1904. Serial No. 236,679.

Claim.—1. The combination with the exhaust-valve, a means for automatically holding it to its closed position, and a reciprocable plunger-rod actuated from the drive-shaft to open said valve; of a support adjacent the outer end of the valve-stem, for the outer end of the plunger-rod, a deflector device pivotally mounted on said support automatically held to its different adjustments under spring tension, said device having oppositely-disposed abutments arranged to be alternately engaged by the plunger-rod, whereby to set the deflector device to bring the end of the plunger-rod in and out of alinement with the valve-stem for the purposes described.

803,053. Tire. Henry G. Fiske, New York, N. Y., assignor, by mense assignments to Morton Trust Company, trustee, a Corporation of New York. Filed June 17, 1899. Serial No. 720,915.

Claim.—1. In combination with a support-

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But if you have a car which you consider almost perfect perhaps you would like a tire fit to associate with it.

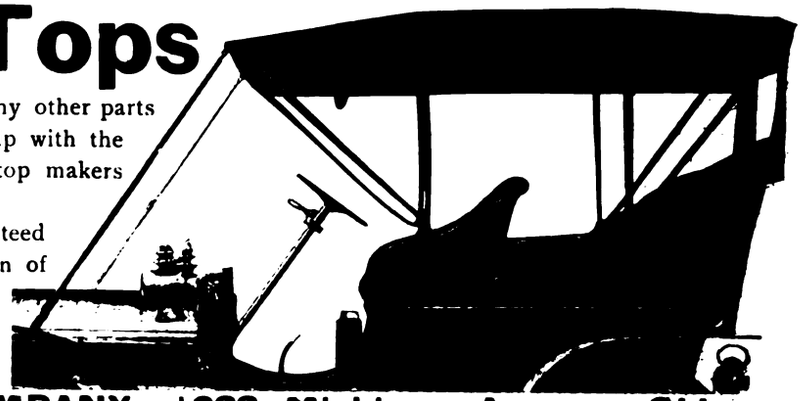
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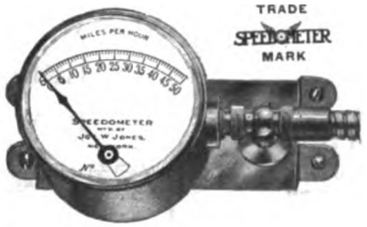
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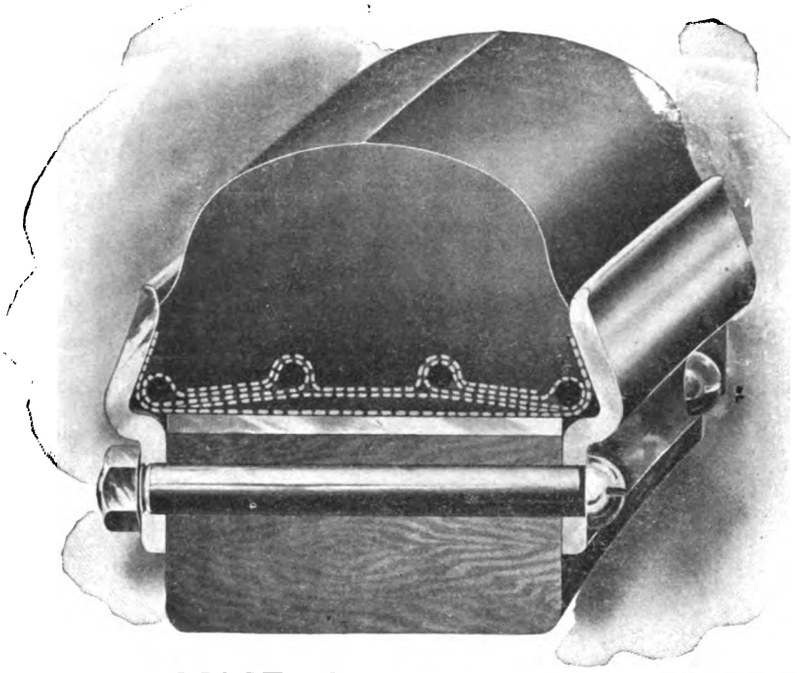
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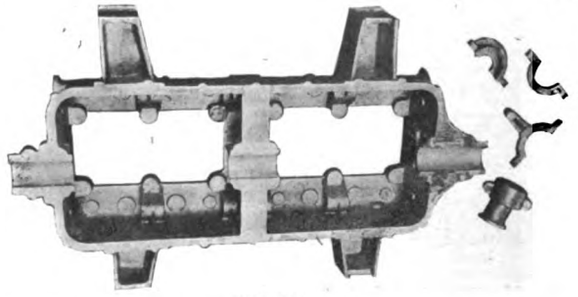
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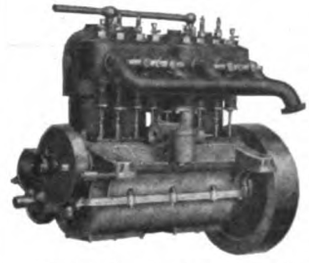
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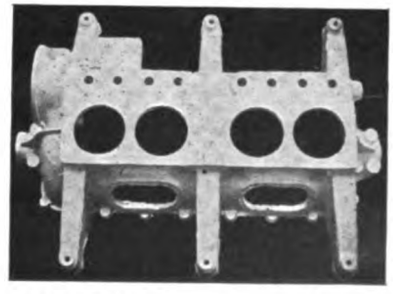
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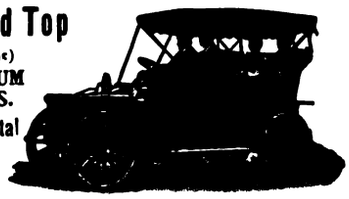
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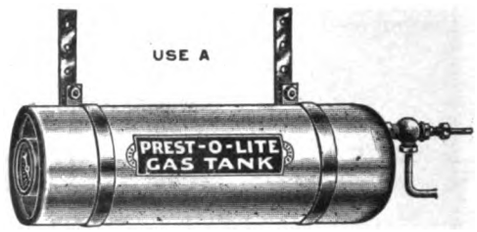
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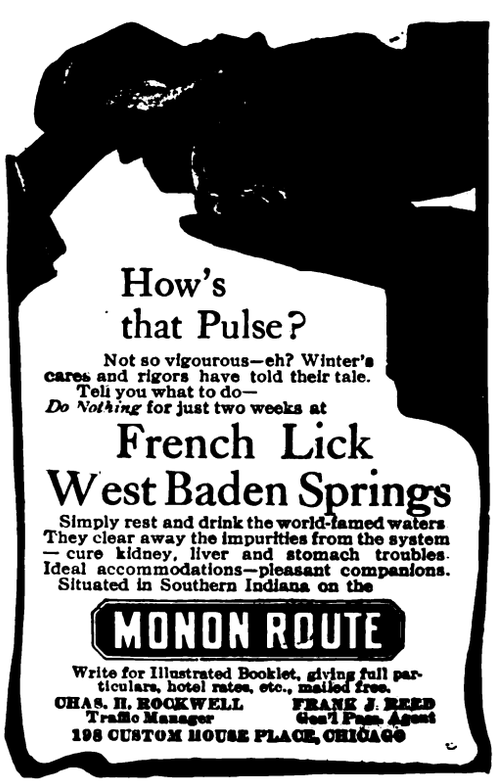
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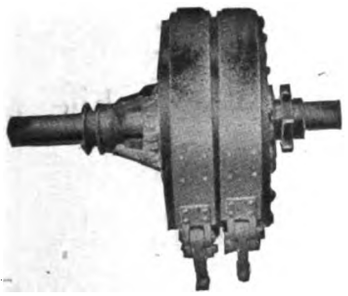
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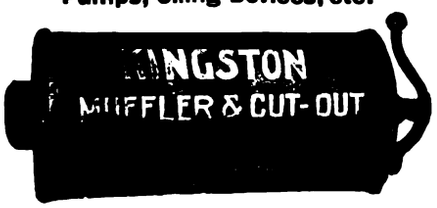
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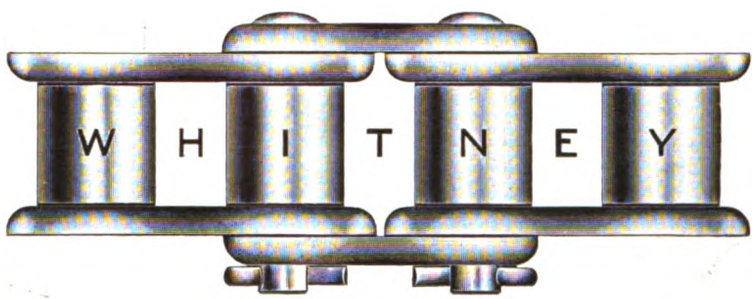
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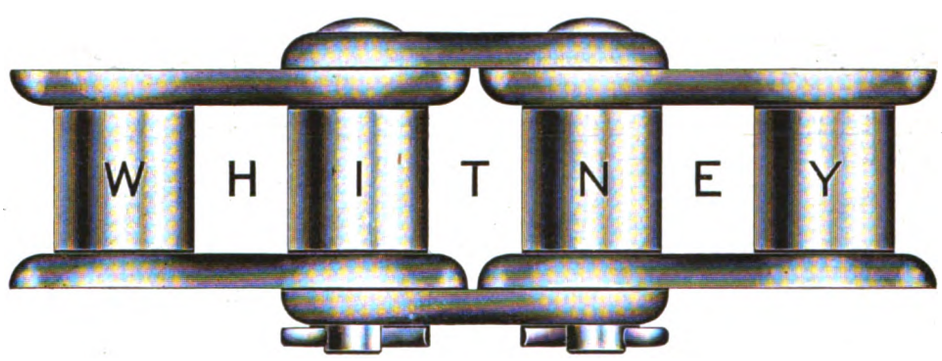
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The Locomobile Company of America, Bridgeport, Conn.

Member Association of Licensed Automobile Manufacturers

NEW YORK, Broadway and 76th St. BOSTON, 15 Berkeley St. PHILADELPHIA, 249 N. Broad St. CHICAGO, 1354 Michigan Ave.

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1906 1906

You cannot hear the sands of time dropping into space,
Nor the quiet Pope-Toledo pass at a mile-a-minute pace.

More Power, More Speed, More Room, More Style, More Strength, Less Weight.

Our 1906 Type XII, 35-40 H. P., "Quiet mile-a-minute Pope-Toledo," is the latest and greatest achievement of the world's largest automobile plant.

MOTOR consists of four individual Twin-head Cylinders, 4-cycle copper Jacketed, developing under brake test 43-44 H. P. All gears encased. The VERY REMARKABLE RESULT of securing ONE H. P. FOR EVERY TEN AND EIGHT-TENTHS POUNDS OF ENGINE WEIGHT HAS BEEN ATTAINED, and this, too, without in any sense sacrificing the strength or wearing parts.

CONTROL is simple, flexible and positive. The car can be driven on HIGH SPEED BEHIND A TEAM WALKING, or up to its MAXIMUM SPEED, simply by the use of THROTTLE AND SPARK, both located on the steering wheel.

TRANSMISSION is of the sliding gear type, having three speeds forward and reverse. Ball Bearings at all important points.

BODY DESIGN entirely new and of distinctive appearance.

Price $3,500.

ORDER NOW FOR EARLY DELIVERY.

In the meantime we have for **immediate delivery** OUR NEW TYPE X FOUR CYLINDER 20 H.P. CAR, one of the most efficient cars on the market. It is specially designed to meet the demand for a light weildy car of great power, which can be easily controlled.

PRICE $2,800.

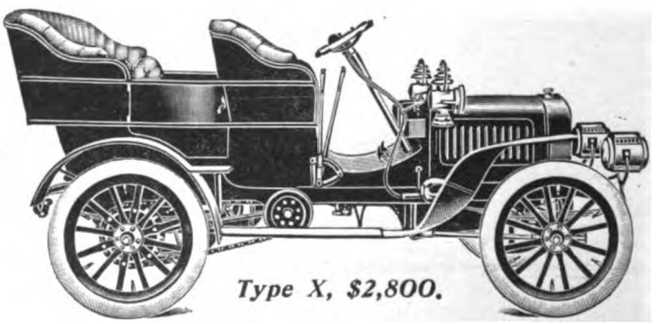
Be sure the name "POPE" is on Your Automobile

Address Dept. A for catalogues.

POPE MANUFACTURING CO.,
HARTFORD, CONN.

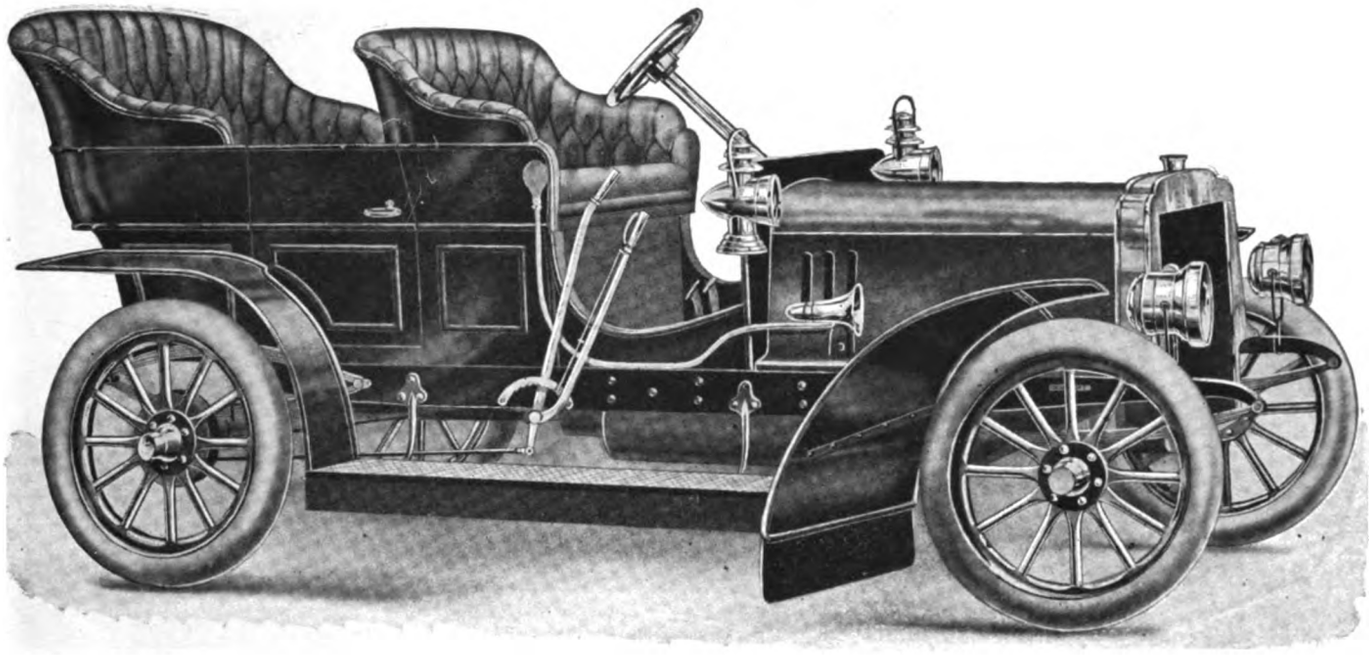
NEW YORK CITY 1733 Broadway
BOSTON, MASS. 223 Columbus Avenue
WASHINGTON, D. C., 819 14th Street
SAN FRANCISCO, CAL., 451 Mission Street

Member A. L. A. M.



Type X, $2,800.

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1906 Ford 6 Cylinder Touring Car Price $2,500

6 cylinders 40 h. p. 4 to 50 miles per hour on high gear. *Perfected* magneto ignition—mechanical oiler, 114 inch wheel base, luxurious body for five passengers, weight 2000 pounds.

1906 Ford Runabout is as advanced as our touring car in design and even more surprising in price—will be fully illustrated and described early in December.

Both these Cars on exhibition at the New York Automobile Show.

Ford Motor Company

Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

Canadian Trade supplied by the Ford Motor Co of Canada, Ltd., Walkerville, Ont.

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Nothing but the everlasting hammering year after year of an enormous organization upon one design of car has made possible the present perfection of the Packard.

Packard Motor Car Co., Dept. 8,

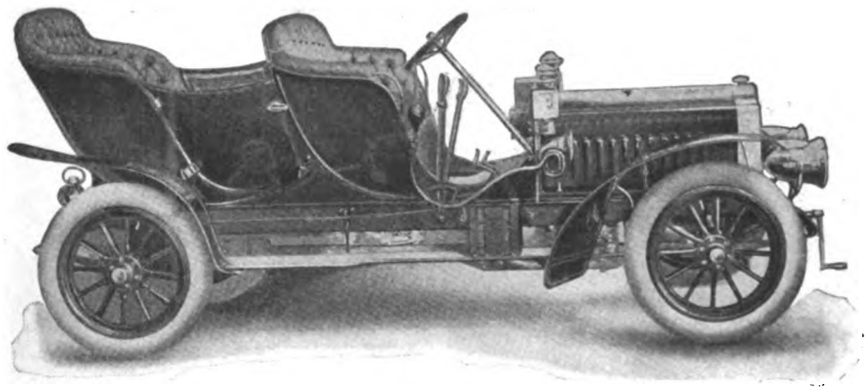
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Detroit, Mich.

New York Branch 1540 Broadway

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QUEENS



ONE OF OUR THREE NEW MODELS

Motor.	4 cylinder—26-28 h. p.
Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder touring car with detachable side door tonneau list at $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's interesting.

C. H. BLOMSTROM MOTOR CO.,

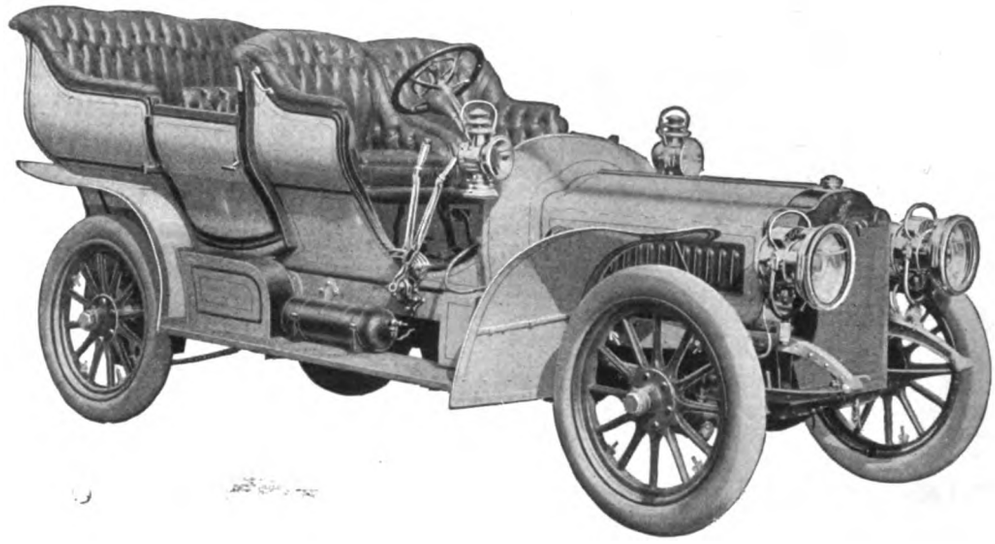
DETROIT, MICH.

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THE NEW THOMAS

Greatly Exceeds My Most Sanguine Expectations.

EXPERTS SAY IT IS A WONDER.



No customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best Car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level and climbs a 10 per cent. grade on the high speed at forty miles per hour, within an hour after it first leaves the shop, it is something that not one Car in a thousand will do.

Under favorable conditions, we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill climbing, quiet operations and mechanical superiority, and cordially urge disinterested Automobile experts everywhere to rigidly investigate our claims and compare our material, workmanship and design with the highest priced Cars in the world—and we will win the verdict.

E. R. THOMAS,

For the E. R. Thomas Motor Co., 1416 Niagara St., Buffalo, N. Y.

Member A. L. A. M.

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UNUSUAL RESILIENCY

IS JUST ONE OF THE THINGS WHICH MAKE



Diamond

SOLID SIDE WIRE TRUCK TIRES

The Most Desirable for Commercial Car Equipment.

Let us send you some interesting literature concerning sizes, weights, etc.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
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BUFFALO—715 Main St.

DETROIT—158 Jefferson Ave.
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SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

ALL SIZES CARRIED IN STOCK

Morris & Wilmarth,
Stock, Grain, Cotton and Coffee,
32 Broadway,
New York, July 22nd 1906

C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chain to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

H. S. M. - G.

THINK IT OVER

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request.

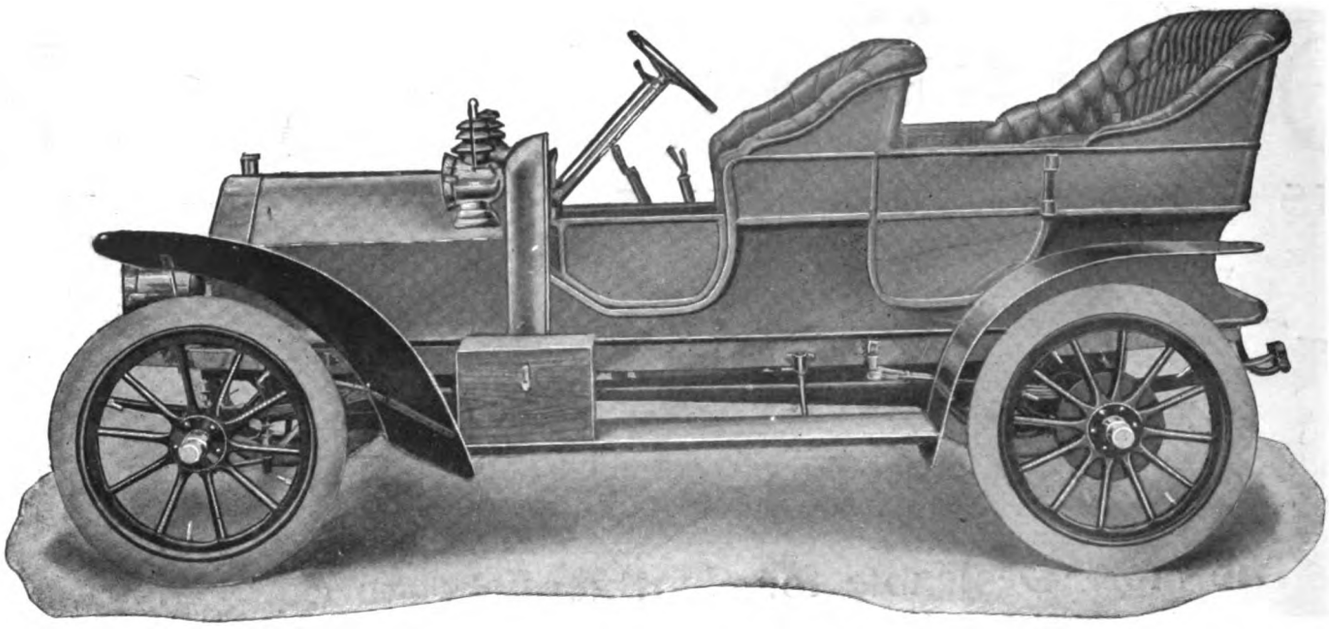
CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER.

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 58th St., New York.
218 & 220 N. Broad St., Philadelphia, Pa.
203 & 204 Columbus Ave., Boston, Mass.
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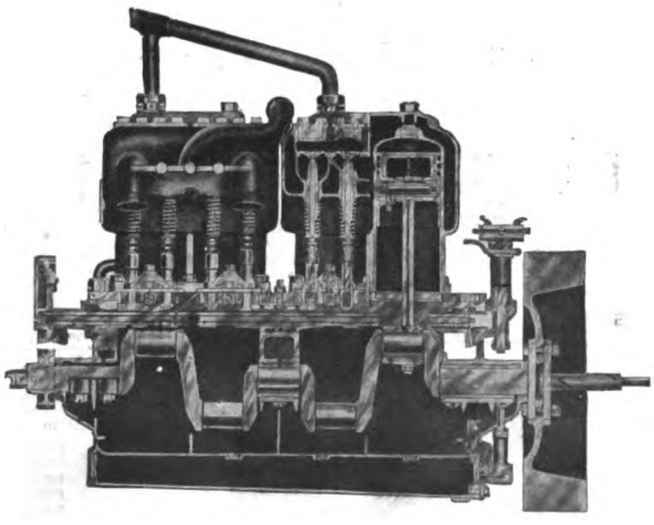


Oldsmobile Model S

¶ Following our more general announcement of last week, we here set forth in detail the leading features of our Four-cylinder Touring Car.

¶ In general appearance this car is strictly up-to-date. The front axle has been placed well forward under the radiator, giving a wheel base of 106 inches. The standard tread is 55 inches; but either 52-inch or 58-inch tread will be furnished to order. The general design of the car is such that the tendency to stir up dust when running is very small. Weight of car 2200 pounds.

Price $2250.



Cross section of the Oldsmobile four-cylinder motor

Motor: The car is equipped with a four-cylinder vertical water-cooled motor, developing 24 to 26 H. P. Cylinder, 4½ inch bore by 4¾ inch stroke. Pistons are carefully grounded, and "run in" with a belt to insure accurate fit. All the cylinders, pistons and rings are made from the best grade of cast iron from our own foundry. An exceptionally silent muffler is arranged longitudinally beneath the side of the car.

Valves: The valves are mechanically operated and easily adjusted. The fly wheel is carefully marked, and an index is placed on the crank case so that the valves may be quickly and accurately timed. All bearings are of generous proportion, and quarter boxes are of babbitt-lined bronze. The cylinders are cooled by means of water circulated by a gear pump. The radiator used is one of our own design, with a flat tube construction. A fan placed just behind the radiator aids in cooling the motor when the machine is standing still.

Crank Case: The crank case is of aluminum. The lower half may be removed without disturbing the bearings, which are hung from the upper half of the case. The crank shaft, connecting rods and pistons can, therefore, be very easily examined or removed without disturbing the hanging of the motor.

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OLDSMOBILE

Frame: A pressed steel frame of channel section is used. In addition to the main frame, a sub-frame is provided which supports the motor and radiator. A portion of the dust pan which runs under the car is riveted between the outside and inside members, and gives a pronounced bracing effect. A portion of the dust pan is removable, so that the motor may be very easily examined, yet at the same time it is firmly fastened when in place and absolutely prevents the dust, mud and water from reaching the working parts of the mechanism. Both engine aad transmission are aligned upon the sub-frame, and all working parts may be removed without disturbing the hanging of the crank, or transmission cases.

Transmission: The transmission is of the sliding gear type, having three speeds forward and one reverse. All the gears are made of special high carbon steel, tempered and hardened. **The control is of the selective type, all changes being made with one lever.**

The clutch is of the "dish pan" or cone type, and is provided with a simple spring device whereby the load may be thrown on the motor gradually, thus doing away with any jerking motion when starting. The clutch may be thrown out by foot lever, and also by emergency brake lever.

Control: Steering is accomplished through a worm and nut mechanism. The nut has a large wearing surface so babbitted that same may be easily replaced at any time. The spark and throttle levers are placed upon the steering post, and just beneath and at the right-hand side of a 16-inch oval-rim steering wheel. An accellerator pedal is also arranged in such a way that it may be used with ease when it is desired to instantly increase the speed for a short interval.

Brake: There are two brakes; one, operated by a pedal control, acting on the cardon shaft, just back of the transmission case; the other, operated by a hand lever, which "sets up" the emergency toggle joint brake upon the rear wheels. Application of this latter brake throws out clutch, disconnecting transmission from motor.

Axles: The front axle is our own special design and is built of 2-inch tubing, having a ¼-inch wall. The steering connections have special large bearings, all these bearings being equipped with "T" handled grease cups, and protected by leather dust caps. The steering connections and gear links are adjustable so that the wheels may be easily lined up at any time. Axle is dropped in center to protect the fly wheel and other parts beneath the car. The rear axle is equipped with Timken roller bearings throughout.

Drive: Bevel-gear drive is used, having a ratio of 3 to 1. Ratio of 3½ to 1 or 4 to 1 will be furnished on special order. We do not recommend any lower than 3½ to 1.

Springs: Large, half-elliptical springs made of the best stock obtainable are used, the front being 36 inches long, and rear 48 inches.

Miscellaneous: The wheels have ten spokes in front, and 12 in the rear, and are equipped with 32-inch by 3½-inch tires. Four-inch tires for extraordinary service can be had on special order. Running board and mud guard irons, instead of being riveted on are drawn into taper sockets upon side members of frame and are easily removable. The lamp brackets are adjustable for different sizes of lamps; dash and tail light brackets are supplied. Luggage rack is equipped at rear on special order. A tabular horn, two acetylene head lights, generator and two oil lamps are furnished with each car. A box carried on running board contains storage and dry cells, tools and compartment for waste and small repairs.

OLDS MOTOR WORKS
LANSING, MICH., U. S. A.

READ AND LET THESE FACTS SOAK IN!

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

K1

Name .....

Address .....

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name .....

Address .....

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year.

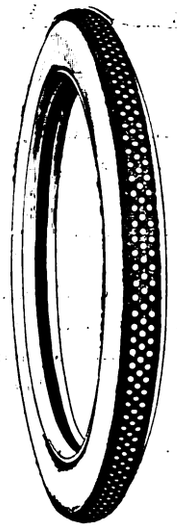
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Name .....

Address .....

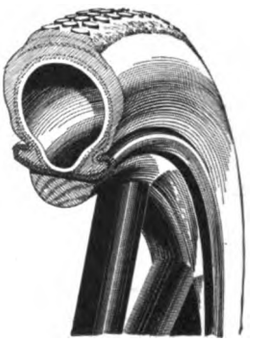
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MICHELIN



The new MICHELIN ANTI-SKID TIRE adopted by all as the most perfected non-slipping, non-skidding and resilient.

WHAT A PLEASED CUSTOMER SAYS:



Mr. E. D. WINANS, 646 Jefferson Ave., Detroit, Mich.
Michelin Tire Co., New York.

Dear Sir:—The new Michelin Anti-Skid Tires are giving utmost satisfaction. They possess the resiliency and speed of pneumatics with non-slipping advantage.

Very truly,
GEO. L. FLEITZ.

MICHELIN TIRE AMERICAN AGENCY, Inc.,
6 West 29th Street, New York

Telephone—4657 Madison

E D WINANS, General Manager

BRANCHES

Chicago, 1461 Michigan Boulevard.
Boston, 751 Boylston Street.
Philadelphia, 322 No. Broad Street.
Washington, 1330 New York Ave., N. W.
San Francisco, 307 Larkin Street.
Rochester, 21-29 Plymouth Avenue.
Baltimore, 1020 Morton Street.
Minneapolis, 709 Hennepin Avenue.
St. Louis, 3935 Olive Street.
Indianapolis, Indiana Automobile Co.
St. Paul, C. P. Joy Auto Co.
Cincinnati, 904 Broadway.
Buffalo, 369 Pearl Street.
Pittsburg, 5903 Centre Avenue.
Utica, 12-18 Lafayette Street.
Poughkeepsie, 14-20 Catherine Street.
Albany, 97-101 Central Avenue.
Newark, N. J., 286 Halsey Street.
Asbury Park, N. J., Main St. and Sewall Avenue
Morristown N. J., 1 South Street.

"Firestone"

Side Wire Tires.

It takes knowledge born of experience to manufacture a tire that will continue to stand the strain of use on commercial vehicles.

In many instances trouble with tires has made a commercial vehicle unprofitable until Firestone Side Wire Tires were adopted.

We have in our office evidence of what Firestone Tires have done after many others had been tried and found deficient.

Then why not "Firestone"?

FIRESTONE TIRE & RUBBER COMPANY

AKRON, OHIO.

New York, Chicago, Boston, Philadelphia, St. Louis and Detroit.

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Congratulations

from a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

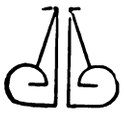
WITH THE BAILEY TREAD.

"We wish to congratulate you because of the splendid way your Goodrich-Bailey tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, the latter seems to be a sure thing on some tires that we know of.

We are looking to 1906 Goodrich and expect to be partial to them, because we believe they deserve it if their previous reputation is any criterion to go by."

—*Asheville Cycle and Auto Co.*, Sept. 23, 1905.

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.



Rims branded in the channel with this copyright mark have been ispected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company

Akron, Ohio.

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 909 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 420 Superior St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.

More Evidence

of

G&J

Merit

World's Record

For 100 miles on Track

by

Jap. Clemens, driving a National Car, at the Indianapolis meet.

Time, 1 h. 53 m. 21 2-5 s.

Not one moment's delay due to tires.

Every Event

at this meet was won on

G&J TIRES

G&J TIRE CO.

Indianapolis, Ind.

Boston Buffalo Cleveland Detroit
Chicago Chicago San Francisco

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DID ANYONE EVER HEAR

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

ROYAL

We have a full description of 1906 model ready to mail to you, if you will send us your address. Will also mail booklet explaining performance of 1906 model in Vanderbilt Trial Race.

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.
Member A. L. A. M.

AGENTS: C. A. DUERR & CO., New York, N.Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE SUPPLY CO., Lim., Toronto: MOTOR SHOP, Philadelphia, Pa.; WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS PIERCE & CO., Syracuse, N. Y.; THOMPSON SCHOEFFEL CO., Rochester, N. Y.

GAS-AU-LEC

Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

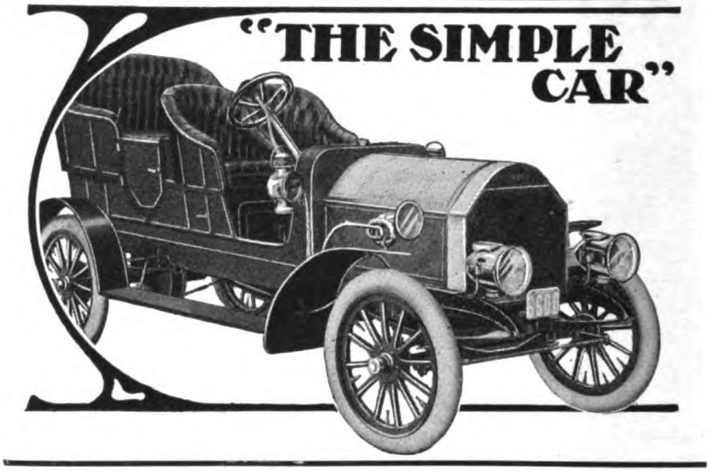
THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.





The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should *not* buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the *two* cycle two cylinder Elmore engine.

Understand—the *two* cycle two cylinder Elmore engine produces *two impulses every time the fly-wheel turns.*

As you know, the two cylinder *four* cycle furnishes only *one* impulse every *fourth* time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached ts climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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THE

HAYNES

WON HONORS

A regular "Haynes" stock touring car, outclassed the especially constructed racing monsters, in the Vanderbilt Cup Elimination Trials securing a position that entitled it to a place on the American Team.

Arandom comparison of the cylinder capacity of the competing cars with the HAYNES (5 inch bore x 6 inch stroke) is sufficient to demonstrate what a wonderful achievement this was.

EXACT DUPLICATES—of the car that outclassed and outdistanced powerful racing monsters is offered for 1906.

LIVE AGENTS—are quick to realize the advantage of handling a car like this. Get your application in early.

We are booking orders in their turn for this car.

The Haynes Automobile Co.,

[Members A. L. A. M.]

New York | Kokomo, Indiana | Chicago

GROUT

GASOLINE 4-CYLINDER CARS

ARE NOT LIKELY to be passed by the agent who is wise to his own interests.



Price $1,800

Read these specifications—then think it over:

28-30 H. P., 4 cylinder, balanced motor, high tension ignition using one coil with distributing commutator.
Forced ventilation by fan.
Mechanically operated valves.
Inlet valves interchangeable with exhaust valves.
Control on steering wheel to gas and ignition, no motion transmitted to these levers by movement of steering wheel.
Gear, three speeds and reverse actuated by single lever.
Wheels, 30 inch artillery, wood, ball bearings, 3½ inch tires.
Armored frame.
Steering by irreversible worm and sector, dust proof and oil tight.
Lubrication; mechanically operated oiler, a definite amount of oil to all cylinders, crank bearings, connecting rod bearings, etc.
Lubricating system has received great attention and is particularly thorough. It is non-adjustable, that is, set at the factory and needs only to be supplied with oil.

Proved Construction Throughout.

THE GROUT, THE GOOD CAR

is built in the first factory in the United States erected especially for the manufacture of automobiles and by graduates of the school of experience.

Write to-day.

GROUT BROS. AUTOMOBILE CO.,
ORANGE, MASS.

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Rambler — A practical car for daily use.

In the design of the Rambler the primal object has been constant daily service and to that end has been provided abundant power coupled with extreme simplicity both in construction and operation.

The result is a car that will travel day after day through all conditions of road or weather and you stay in the the car—not under it.

Our catalog and the Rambler Magazine will give you details. Both are at your service.

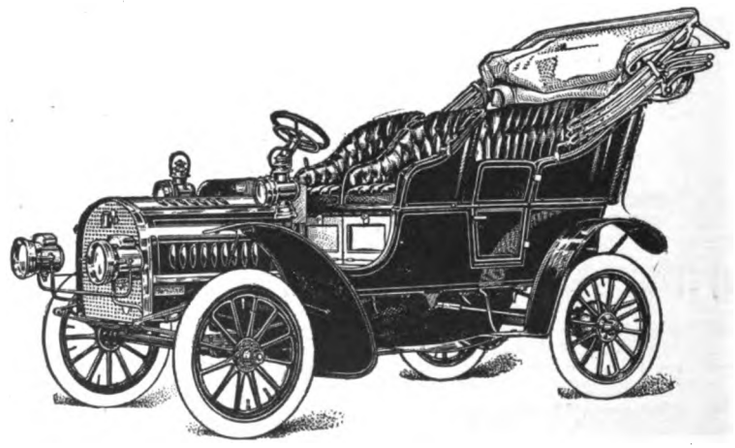
Surrey Type One, shown below, a five passenger, medium weight touring car, ready for the road with lamps, horn and full equipment of tools, etc., $1200. Cape top, or canopy top with glass front, $100 extra.

Surrey Type Two, a five passenger touring car of more elaborate design, with double chain drive, full canopy top and glass front, $1650.

THOS. B. JEFFERY & CO.
KENOSHA, WIS.

BRANCHES
CHICAGO MILWAUKEE BOSTON PHILADELPHIA SAN FRANCISCO

NEW YORK AGENCY, 134 W. 38TH STREET



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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, November 16, 1905. No. 8

MOVING PICTURE SALESMEN

Interesting Experiment to be Tried by Maxwell-Briscoe—The Objects to be Served.

Moving pictures as an aid to the sale of automobiles are to be tried by the Maxwell-Briscoe Motor Car Co. Their idea is that by such means they will be able to establish small agencies and introduce their product in places where it has heretofore been unknown.

The company will send a number of its representatives in touring cars through sections of various Eastern States, each salesman carrying with him a complete moving picture outfit, including a large screen. On arriving in a town the salesman will arrange to give a moving picture exhibition in some public place. The views shown will include racing and touring incidents, including the performance of the Maxwell car in its trip up Mount Washington, and other interesting events. The travelling representatives will place agencies in many of the towns they visit, in addition to generally educating the public regarding the Maxwell cars. The first of these missionaries to start will be P. B. Blisdale, who begins work next Monday, starting over a route which includes many of the towns in Northern New Jersey.

Strike Up the Band! Hol-Tan is Coming.

Hollander & Tangeman, the American agents for the F. I. A. T. car, have leased the new five story garage on the northwest corner of Broadway and Fifty-sixth street, New York City, and will take possession about December 1. The building has a frontage of 50 feet on Broadway and a depth of 120 feet on the cross street. Simultaneously it is announced that the firm will become a stock company on January 1, taking the comic-opera title of Hol-Tan Co.

Elusive Promoter Finally is "Pinched."

Howard T. Heath, president of the International Automobile Co., of Chicago, which apparently existed on paper only, and for whom the police of several cities have been looking for some time, has at last been found and is now at Elgin, Ill., under $1,800 bail, to await the action of the Kane County Grand Jury. Heath was arrested on warrants sworn to by John Oberst and George Volsch, of Elgin, who alleged that Heath had "trimmed" them to the tune of about $1,400. Two more State warrants were served on the president of the automobile company this week through victims who assert they subscribed liberally to Heath's wonderful company.

Lowe Links with Wayne.

If there is not a substantial increase in the interest in Wayne cars and the number of them in use in New England, it will be cause for remark. George H. Lowe, former manager of the White Sewing Machine Co.'s Boston branch and the dean of the New England trade, has purchased an interest in the Wayne Automobile Co. of New England, at 509 Tremont Street, Boston, and, as he is so well and so widely known and his acquaintance is so large, sales are reasonably certain to follow where he leads.

Blackman Becomes a Sales Manager.

C. W. Blackman has engaged with the Parish & Bingham Co., Cleveland, Ohio, as manager of sales, and entered upon his new duties this week. Blackman is well known to the trade, having been for several years connected with a publication noted for its horselessness.

New Firm Buys Whole Output.

Douglass, Andrews & Co., who recently established themselves at No. 1,623 Broadway, New York City, with C. S. Tate as manager, have contracted for the entire factory output of Berkshire cars for next year. This means, of course, that the appointment of agents will be in their hands.

Spiers Leaves the Autocar.

John C. Spiers, general manager of the Autocar Co., Ardmore, Pa., has resigned his office, disposed of his holdings and entirely severed connection with the company. He has several irons in the fire, but is not yet ready to make disclosures.

Goes Back to Waltham.

The general offices of the Waltham Mfg. Co. have been again returned to the factory at Waltham, Mass. The transfer from No. 44 Broad street, New York, was made yesterday.

FORD SPRINGS TWO SENSATIONS

His Low Priced Runabout is One of Them but There's a Surprising Big Car, too.

Ford—that is, the Ford Motor Company of Detroit, this week uncovered two sensations—one a big six-cylinder 40 horsepower touring car at $2,500, and the other a four-cylinder vertical 15-horsepower runabout at a price between $400 and $500, the exact figure not having been definitely settled.

While perhaps the idea of a four-cylinder car at $500 is immensely sensational, and fraught with enormous significance to the trade, the runabout is really not so surprising as the touring car. While few, if anyone, expected that the runabout would be fitted with a four-cylinder engine, the matter of its low price had so long preceded it and had been a subject of so much discussion that the edge was rather taken off the sensationality of the official announcement.

Of the big car, little, if anything, had been said. It had been kept well under cover, and with practically every other manufacturer devoting himself to the perfection of his four-cylinder model, or designing one to be added to his 1906 line, that Ford was at work on a six-cylinder car entirely escaped notice.

In addition to these two new models, the Ford Motor Company will continue to make and market its two-cylinder opposed model at $1,000.

The picture of the $400-$500 Ford makes it appear not unlike the many two-cylinder, two passenger runabouts in use this season, with square bonnet and sloping rear body on which is mounted two individual seats. The specifications of this car, which will be styled Model N, as disclosed by the Ford advance sheet, are as follows:

Motor, four-cylinder, vertical; cylinders 3⅜-inch bore by 3¼-inch stroke, 15 horsepower. Speed, forty miles an hour down to three miles on high gear. Improved planetary transmission, with improved clutch. Seventy-eight-inch wheel base. Water cooled. Ignition, two sets of dry cells. Mechanical oiler. Gasolene tank, under seat.

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containing ten gallons, sufficient for 200 miles. Water contained in radiator. Hub brakes—internal expansion, with lever control. Emergency brake on driving shaft, controlled by foot pedal. Springs, full elliptic in rear, and half elliptic in front. "Famous Ford" direct drive construction. Roller bearings on rear axle, with ball-bearing thrust—special design. Ball bearings on front wheels. Wheel steering (fitted with Ford reduction gears) takes all the strain from steering over the roughest road, an exclusive Ford feature. Luxurious body, carrying two passengers. Weight, 700 pounds. Fifty-six-inch tread. Wheels, artillery, 28 inch. Tires, 2½ inch. Lubricating oil sufficient for 200 miles. Color, maroon. Equipment, two side oil lamps, tail lamps and horn. Price $400 to $500—will be definitely decided shortly.

The specifications of the six-cylinder car, Model K, are as follows:

Motor, six-cylinder, vertical, 4½-inch bore by 4¼-inch stroke; 40-horsepower. Speed, fifty miles per hour, down to four miles per hour, on the high gear. Improved planetary transmission, with improved clutch. Pressed steel frame. 114 inch wheel base. Water cooled; circulation by gear pump. Perfected magneto ignition. Mechanical oiler. Gasolene tank under seat, containing 15 gallons—good for 250 miles. Water contained in radiator. Hub brakes—internal expansion, with lever control. Emergency brake on driving shaft, controlled by foot lever. Springs, full elliptic on the rear, and half elliptic on the front. "Famous Ford" direct drive construction. Ample roller bearings on rear axle, with ball bearing thrust—special design. Ample ball bearings on front wheels. Wheel steering (fitted with Ford reduction gears) takes all the strain from steering over the roughest road, an exclusive Ford feature. Luxurious body, ample for five passengers. Weight, 2,000 pounds. Price, $2,500. 56-inch tread. Wheels, artillery, 32 inch. Tires, 4 inch. Lubricating oil sufficient for 250 miles. Color (?). Equipment, two side oil lamps, tail lamp and tubular horn.

To Angle for American Visitors.

According to a French print, two or three Americans have formed a small company in Paris for the manufacture of motor cars, under the name of the Dolores. Their names are not given, but it is stated that their idea is to cater to those Americans who come to Paris in search of cars.

Verdict for the Dealer.

Because a car in which he was a passenger upset and inflicted some injury James Routledge felt called on to sue the Rambler Automobile Co., of San Antonio, Tex., for $5,000 damages. When the case was tried last week, however, James was presented merely with a chunk of wisdom. The verdict was for the defendants.

The Week's Incorporations.

Charlotte, Mich.—Dolson Automobile Co., under Michigan laws, with $100,000 capital. Corporators not named.

Boston, Mass.—Adams-Sutton Motor Co., under Massachusetts laws, with $40,000 capital, to deal in automobiles. Corporators, Nathan Gould and C. I. Foster.

Nyack, N. Y.—Rockland Motor Co., under New York laws, with $5,000 capital; to deal in automobiles. Corporators, Truman H. Baldwin and Frederick W. Barker.

Boston, Mass.—Baker-Cormerais Motor Car Co., under Massachusetts laws, with $10,000 capital; to deal in automobiles. Corporators, A. E. Baker and H. D. Cormerais.

Philadelphia, Pa.—Foss Hughes Motor Car Co., under Massachusetts laws, with $5,000 capital; to deal in automobiles. Corporators, H. W. Knight, W. J. Foss and Archie Hughes.

Cleveland, Ohio—The Motor Car Supply Co., under Ohio laws, with $10,000 capital. Corporators, W. B. Drown, E. G. Guthrie, I. H. Drown, E. C. Gesoner, A. P. Graves.

New York City, N. Y.—McGlehan Mfg. Co., under New York laws, with $20,000 capital, to manufacture automobile supplies. Corporators, Franklin B. Seidel, Stanley D. Forbes and D. DaCosta.

New York City, N. Y.—Motor Directories of New York City, under New York laws, with $1,000 capital; to publish motor directories. Corporators, J. A. Herren, A. P. Young and F. J. Pritchard.

Jersey City, N. J.—Day Inventions Co., under New Jersey laws, with $1,000 capital; to make engines of every description. Corporators, Joseph Day, Thomas Fleming Day and Walter E. Torena.

Chicago, Ill.—Manufacturers of Auto Parts, Appliances & Accessories Exhibition, under Illinois laws, with $2,500 capital; to conduct trade exhibitions. Corporators, Frank Schoenfield, Emil I. Link and Russell S. Clark.

Union, N. J.—The Union Automobile Co., under New Jersey laws, with $10,000 capital; general automobile business. Corporators, Howard V. Weeks, Frank Hermance, Heber J. Ware, H. Joseph Kaiser, and William A. Maltus.

In the Retail World.

Landis Eberhardt has opened a garage in Tiffin, Ohio. Repairing and storing cars will be his specialty.

Raymond Perrigo and Wayne Stuch will start in business at Allegan, Mich., shortly. A new garage will be built in the spring.

Cole & Son have relinquished the Rockford (Ill.) agency for the Rambler cars. They will be handled next year by the Rockford Tack & Nail Co.

Grey F. Jansen has acquired the interest of F. I. Bills in the Davenport Automobile Co., of Davenport, Iowa. The company has plans for a new garage at the northwest corner of Fifth and Perry streets.

The McDuffie Automobile Co, of Chicago, will open a branch in Milwaukee, Wis., on January 1. The one story building now being erected at Nos. 228 and 230 Wisconsin street has been leased for the purpose.

Owing to his increasing business, W. B. Felker, head of the Felker Automobile Co., of Denver Col., has purchased the vacant property adjoining the garage at No. 1,535 Tremont street. A big addition will be erected in the spring.

What is claimed will be one of the most complete garages in the West when finished is to be built at Nos. 1,622-1,626 Broadway, Salt Lake City, Utah, for the Mathewson Automobile Co. The company has signed a lease for three years.

George Johnston and Frank Ruhl have taken over the business of the Keller-Needham Automobile Co., of Decatur, Ill., which was the monarch of all it surveyed, conducting the only garage in the city. It was owned by Johnson & Landis, who leased it to the Keller Needham Co. The new firm acquires the goodwill and machinery of the lessees and the property of the Johnson & Landis Co.

A. A. Atwood, Marshall Sheppy, Sinclair Berdan, A. M. Chesbrough and George Mills, all prominent business men of Toledo, Ohio, are behind a project to erect a large garage in that city. The company will be capitalized at $50,000, most of which has already been paid in, and the building will be erected on Monroe street, in the heart of the wealthy residential section.

William Dennin and Charles Kelly, comprising the Albany Automobile & Exchange and Troy Automobile Storage & Exchange companies, contemplate the erection of a new garage in Albany in the vicinity of State and Willets streets. William G. Reynolds, a local dealer, will probably consolidate with these firms and take charge of the new place.

A new garage was opened on November 8 by the Palace Automobile and Machine Co., of No. 208 West 124th street. A building of modern and fireproof construction has been built, which is thoroughly equipped for the work. The establishment will be under the management of Charles H. Barmsted.

Pending the completion of their large garage and salesroom at 89-90 Washington Street, the recently incorporated Greene Motor Car Co., Newark, N. J., have secured temporary quarters at 775 Broad Street. The concern takes its title from R. A. Greene, of Passaic, N. J., who is its president and who, notwithstanding retains his long connection with the Locomobile Co.'s New York branch. E. A. Greene is treasurer and W. C. Overman secretary and manager. The latter was formerly of the once world famous Overman Wheel Co., makers of Victor bicycles. The Greene Co. will handle Locomobiles in Northern New Jersey and also considerable Oldsmobile territory. In addition they will represent several foreign cars.

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NO MOTOR WAGONS ON DOCKS

No One Objects to Them but None is Willing to Bear Increased Insurance.

The gasolene commercial vehicle has encountered a new obstacle which must be overcome. The owners or lesees of a number of the most important docks on the New York waterfront have prohibited the use of such vehicles on their property.

Where the ban on loose matches carried even in the pockets of laborers is so rigidly enforced it is not strange, of course, that such a situation should arise. But the queer part of it is that none of those concerned, the city departments, the dock owners, the steamship owners nor the insurance companies, have any real objections to the motor wagons.

It is all a matter of insurance. The insurance companies, with the same stubbornness that characterized their opposition to kerosene, now rail at even the word gasolene, but if any one will pay them enough they will sink their objections. They want some one to pay them about $1,000 per year for each dock on which the use of gasolene vehicles is permitted, and, of course, none is willing to pay it. Ordinarily the dock people carry such insurance, but they feel that motor trucks and wagons are not yet sufficiently numerous to justify such an outlay, and the insurance people, for the same reason, maintain that the risk is not such as is covered by their policies. There the matter is deadlocked, and although protests are being made, the question is one of the many which will be settled only by time and the more extensive use of such vehicles.

Preparing for the Olds "Circus."

It is late in the season for an outdoor, old fashioned tent circus, and particularly in Central Michigan, where just now there are three inches of snow on the ground, but one will be held at Lansing on November 17 and 18.

There will be at least one hundred performers, each doing his particular stunt and all under the direction of the Olds Motor Works. The circus will be the gathering of the Oldsmobile agents throughout the country, and provision has already been made for the accommodation of 108, and even more are expected.

The invitation to these different agents was issued in the form of a full sized circus poster sheet, with all its glaring headlines and the startling announcement:

"Come one! Come all! See the Gigantic, Gorgeous Glimpse of Gyratory Gyroscopic Go-Devils. Nothing even half so Good." . .

In the body of the poster is a large size drawing of a circus tent, the centre pole being plentifully topped off with Oldsmobile flags and the sides of the tent elaborately decorated with cartoons of the different agents, beginning with the "Duke of Albany, the only remaining member of the Swiss family Robinson," and extending around to "Monsieur Moriarité, from Missouri, who is to be demonstrated," while the flaps of the entrance are held open by "Silky Stokes" and "Little Fredie Smith."

It is intended to entertain the agents at a banquet and vaudeville show; but there will also be serious work, for the lines have been mapped out for an active, bustling campaign, and the agents will drill to act in unison to keep the Oldsmobile in the forefront the coming season.

Ford in Larger Quarters.

On November 3d the Ford Motor Co.'s New York branch moved into its new quarters at Broadway and 55th street, where are more commodious accommodations for both salesrooms and garage than were afforded at its former place of business in the Old Guard Building. At the same time the occupation of the old place was taken up by Douglas, Andrews & Co., who will use it as the headquarters of the Berkshire Automobile Co.

Boston Show Set for March.

Boston's automobile show will next year, as this, be held during the second week of March, the 10th and 17th. Mechanics Hall having been again secured. No date has been set for the allotment of space, but it is understood that nearly all the available room has been spoken for. It is doubtful if an "Impostors" show in Symphony Hall will again be attempted, since last March's "imposition" proved such a miserable fiasco.

Briscoe Gets More Room.

The Wheeler Mfg. Co., Detroit, Mich., having taken possesion of a new plant, the Briscoe Mfg. Co. have promptly acquired the vacant Wheeler factory and added it to their own extensive plant. It affords an increase of 15,000 square feet, which, with their Eastern factory in Newark, N. J., places them in position to promptly meet all calls for their radiators, fenders and the like.

Cleveland Fixes Its Show Dates.

Probably to comply with the recent ultimatum of the National Association of Automobile Manufacturers, the Cleveland (Ohio) Dealers' Automobile Co. has announced that it, and not the Cleveland Automobile Club, will this year promote the annual show to be held in the Central Armory. The date has been set for the week of February 18 to 25. George Collister has engaged as manager.

Locomotive Company Imports French Experts.

Two French automobile engineers, Messrs. Rouset and Pinneau, who arrived in New York this week, are the forerunners of a group of experts and mechanics who will take up the automobile work of the American Locomotive Co.

HERE'S A CHICAGO HOWD'Y'DO

Partners Fall Out and Charges of Perjury and Other Things Promptly Follow.

The courts will be called upon to settle the differences between J. E. Haschke, proprietor of a local garage, Clair A. Orr, treasurer of the Marquette Electric Co., and Henry A. Wehyl, a banker, all of Chicago. The garage keeper has filed charges of perjury against the other two men and named them as defendants in a suit filed in the Superior Court for $25,000 damages, alleging malicious prosecution. The suit follows the arrest of Haschke on a charge of appropriating machinery. The case was dismissed by Justice Martin upon the production by Haschke of an agreement between Orr, Weyl and himself looking to the formation of a corporation for the manufacture of an electric battery invented by Haschke.

The corporation was never legally formed, because, acording to Orr, Haschke failed to satisfy them of his claims. Mr. Orr declares that all business relations between the three then ceased. Haschke says that Orr and Weyl furnished $1,500 for a garage at No. 8,789 Ashland boulevard, and for a time paid rent and wages. Recently, he alleges, they refused to pay rent and were sued by Aldis & Co., who were given possession of the property. Haschke says he gave up a part of the property and arranged with the proprietors to continue business. Haschke then moved a part of the machinery from the premises and was arrested. Haschke charges that Orr and Weyl denied in court having ever paid rent or salaries in connection with the garage, which, he declares, makes them guilty of perjury. Warrants have been sworn out for Orr and Weyl.

How Providence Honored Hughes.

Archie Hughes carried with him to his new home in Philadelphia a French clock, a gold matchbox and a silver flask as tangible evidence that the friends he made in the old one, Providence, R. I., entertain more than passing regard for him. The clock was a gift from several intimates, the matchbox one from the employes of the Pope branch, the management of which he relinquished last week, and the flask a memento from a number of Rhode Island Automobile Club men. Hughes and W. J. Foss constitute the new Foss-Hughes Motor Car Co., in Philadelphia, and, in addition to the gifts, both were the guests of the Rhode Island club at a complimentary smoker given in their honor.

Carrie Returns to Haynes.

F. G. Carrie, former manager of the Haynes branch in New York, has returned to his old post. His resumption of the duties was almost concurrent with the arrival of the first 1906 Haynes car in the city.

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TO USE **FISK TIRES** MEANS

Economy of Time, Energy and Money.

Their quality makes them not only comfortable and safe, but durable, and thus inexpensive to maintain.

Quality is the first consideration in every tire that we produce.

We urge the comparison of quality elsewhere with Fisk Quality. Look into the matter and be convinced.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:—New York, 784-786 Seventh Ave. Chicago, 1251 Michigan Ave

BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Dwight St.
PHILADELPHIA, 626 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 422 So. Clinton St.
BUFFALO, 868 Main St.
CLEVELAND, 818 Euclid Ave.
DETROIT, 264 Jefferson Ave.
ST. LOUIS, 3906 Olive St.
OMAHA, 1116 Farnum St.
KANSAS CITY, 1230 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1034 So. Main St.

CADILLAC UTILITY

THE SINGLE CYLINDER CADILLAC
Will climb any hill that any automobile will climb.

THE SINGLE CYLINDER CADILLAC
Will travel any road that any automobile will travel.

THE SINGLE CYLINDER CADILLAC
Will travel as fast as anybody ought to ride.

THE SINGLE CYLINDER CADILLAC
Costs less to operate. Costs less to Maintain.
Requires less attention than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined, and won for them the unquestioned distinction of

AMERICA'S LEADING MOTOR CARS.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers.

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No Gold Dollars for Fifty Cents.

Probably as long as the world remains round, the human desire will exist to obtain goods of whatever nature at less than catalogue prices. It follows that during that eternity of time there will be those who will endeavor to turn to their advantage this human failing, or inclination or whatever it may be. The price-cutter in varying guise always will be with us, and he will continue to angle for "suckers," to use an expressive if inelegant term, with pretty much the same old baits.

The Motor World's series of articles reporting the results of its investigations of several of the institutions professionally anxious to save the dear public from the payment of manufacturers' prices on automobile wares indicate that their wiles and ways are quite the same that have been practiced in older industries.

Their heraldings of discounts and cut-prices are means chiefly to the same old end—to attract prospective purchasers to their stores, and then more or less gently practice the game of substitution. Usually they are "just out" of the standard articles the purchaser most desires, but as always, they have something just as good, and, also as a matter of course, they are ready and willing and very anxious to sell it at a lower price than the article which is a "known quantity," and which has acquired a proud reputation, generally at the cost of a considerable fortune and years of effort. To combat this reputation, the price-cutter must needs have a strong weapon, and at this time none is so strong as the cry of "Trust." The way it is wielded by the price-cutters of the automobile trade, the unknowing might well suppose that there practically is no reputable product pertaining to automobiles that is not in the grasp of a vicious Trust. It is all very amusing to men who know, but that there are many persons who gulp down the Trust morsel without "gagging" is evident. Like the "come-on" in the green goods game, they are well aware that in buying the just-as-good stuff that is palmed off on them, they are "taking chances," but often they take them for the matter of a mere dollar or two.

The man who would "rather be sure than be sorry"—and in the use of automobiles particularly, that policy pays unusually large dividends of satisfaction—knows that it is impossible to obtain gold dollars for fifty cents, and that any person who holds out such an inducement has some ulterior purpose to serve, and is therefore to be considered an object for suspicion. The price cutter is in ninety-nine cases out of a hundred a gold-dollar-for-fifty-cents man. He knows he has no gold dollars, that is, standard wares, to sell at that price, but he strives to make it so appear in order that he may attract "come-ons," to whom he schemes to sell gilt pieces that may look just as good as the gold dollars. The price-cutter rarely rings true.

The Punch from the Postoffice.

It will be interesting to discover which particular red-taped exponent of progress in the Postoffice Department is responsible for the order prohibiting the use of motor vehicles in the rural delivery service. For of all the assinine, illogical reasons ever advanced to excuse official action the ones given in this case by the Fourth Assistant Postmaster General are entitled to high rank.

The conditions of roads and bridges vary and not all of the automobiles with which carriers have been permitted to experiment have proved reliable—these are the reasons given. The crux of it all is, of course, that on occasion mails have been delayed. It is easy to imagine that very many of the rural carriers have used cheap and unreliable machines on roads unsuited to them, but to arbitrarily rule that no carrier shall employ such means no matter how good his conveyance or how good the roads or how many hours he has quickened the delivery of mail matter, because of such speed-means, is the rankest heresy.

The same species of logic should also rule out horses because horses also differ and it is not infrequent that they go lame. And railway trains—there are some portions of the country in which nothing is more unreliable than the trains. Why then permit them to carry mail matter?

If the Department set up a standard of some sort and settled each case on its merits, there would be no fault to find. But a sweeping order that makes no distinctions, that rules out the efficient and the inefficient alike, is a form of the bureaucracy that so often nettles and makes officialdom the laughing stock of the world.

Because the carrier in the roadless State of Mississippi cannot maintain a schedule, the people in New Jersey or Massachusetts, where splendid roads abound, must suffer that their mails be delayed hours beyond what the motor vehicle renders possible. That certainly is a chunk of sand-papered logic that a man of the Roosevelt type should readily swallow if it is properly served up to him. The automobile organizations should see to it that it is so placed before him. For by inference and in effect that order of Fourth Assistant Postmaster General Whatshisname is just about as nasty a slap as ever an industry received from a supposed paternal and protective government.

Why the Two-cycle Engine.

Undoubtedly the fact that the makers of the Oldsmobile have decided to include in their line for 1906 a car equipped with a two-cycle engine, will do much to direct a very greatly increased volume of attention to that type. Its adoption by a concern of such size, importance and world-wide repute is, indeed, the biggest boost the two-cycle motor ever has received, and eyeliftings will not minimize its import.

Although the records of the Patent Office abundantly testify that this type of motor has received generous effort at the hands of inventors, the fact that the manufacturers of the Elmore car have long remained as

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its only conspicuous exponent in the automobile field, has served to make the two-cycle of restricted interest.

This state of affairs is largely accounted for by the fact that although many designers have at one time or another turned their attention to a more or less serious consideration of the two-cycle problem, the great mass of authentic data on the four-cycle motor which is ready to hand, and the comparative certainty of success in following a beaten track, has led most of them to turn into the well travelled way, and leave the necessary experimentation to others.

Thus the two-cycle engine has been largely kept confined to the boat industry, and to some extent to the stationary field, in both of which the demands upon a motor are far less rigorous than in automobile work. The Elmore car has, however, valiantly held its own, and it is a matter of common understanding that that best of criterions, the balance sheet, never spoke more eloquently of success than this year and is such as to give most emphatic refutation to the idea that the two-cycle motor is unfitted for the work of propelling road vehicles.

A close study of the principle of the thing would show this as well, for upon the face of it, the object of halving the variation in the turning moment of the common type of motor, that is to say, making its operation twice as steady, is what has been gained in that type only by the introduction of additional cylinders. If the two-cycle motor is the equivalent of the four-cycle motor of double the number of cylinders as far as the number of impulses is concerned, and nearly its equivalent in point of efficiency and power, then, granting an equal amount of flexibility in control, it should be worth twice as much, for it will weigh only half as much, and cost hardly more than half as much to build, and surely these are considerations worth a deal of striving for.

Fashion and Weights.

In any industry, that phenomenon which in its relation to the design of feminine headgear is called fashion, and in its relation to the design of machinery is called common practice, ebbs and flows like a complex, swirling tide, turning hither and thither under the influence of this condition and that, but just as surely ebbing and flowing all the time. Thus in process of time this or that feature which was sanctioned yesterday meets with little or no approval to-day, and to-morrow becomes obsolete or else resumes its former prestige. This phenomenon is as noticeable in the automobile industry as it was in the early days of the bicycle industry, as it is in every industry.

In the automobile trade the whole trend for a time was toward an increase in the size and weight of cars. Then the demand for increased speeding power and hill climbing capacity called for a greater ratio of engine capacity to weight, and to accomplish this the first step was to lighten the car. The second step was to improve the motor, both in minor detail and using an increased number of cylinders of smaller contents than had formerly been done. Thus the industry stands to-day, the engine of the standard type of car far more powerful than it need be to propel the car at rational speed over good roads, the weight for the most part being fined down to the limit of safety, yet still in excess of what should be necessary, considering the carrying capacity. And still the cry is for less weight in order that there shall be less strain on tires!

In many cars already on the market, and in many which will be sold within a twelvemonth, the weight is and will be cut down to the limit, and below it. There is a certain ratio between the weight of a car and the speed at which it can be driven safely on the road. This ratio has yet to become a recognized factor in motor car design, but it is none the less existent and important. To lighten the machine without decreasing its highest speed capacity, which is the measure of its maximum performance, is to produce a machine which will not stick to the road, but will bounce about and become unmanageable under certain circumstances. Moreover, to lighten the weight on the tires does not necessarily involve a lessening of the wear on those parts, since practical results have shown all along that, keeping within a certain range of tire sizes for a given weight, the life of the tire depends more upon the driver than upon anything else.

One of the most significant triumphs in the bicycle industry came when the manufacturers succeeded in getting the public to accept a heavier machine than had been popular, and the tide set away from the craze for flimsy products which rivalled one another in lightness. It followed a practical avowal on the part of the makers that they could not wisely nor safely cut down weight beyond a certain limit. So, in the automobile business, a turning point must come, when the limit to the further reduction in weight will be found and the maker will dare go no further. To talk of lightening the car to save the tires is but begging the question. The tires are all right as far as they go, but they need a better supplemental action in the suspension of the car. The light car is all right, but it cannot safely be made a fast car.

What is most needed in the machine of the day is stability in every fibre. To a certain extent this can be secured only by the use of heavy materials. Certainly the rigidity and durability in every part, which alone can make for endurance, can only be secured by the use of the highest grade of materials. Hence, to lighten the car without decreasing its power, involves a greater first cost to the maker and so to the user, which is not what either desires. So in working toward the ideal combination of practical efficiency and low cost, the reduction of weight must certainly be made an entirely subordinate factor.

Effects of Motor Trucks.

One of the most notable features of the growth of the commercial vehicle trade is the vast amount of territory over which the use of this class of automobile is spreading. In the beginning of the present industry, the sale of cars was confined in great measure to those wealthier communities which lay in the immediate vicinity of the factories. The sale of commercial vehicles is not so confined. Rather is the bulk of the business particularly in trucks and other heavy vehicles, coming from some unexpected places which serve to illustrate vividly the tremendous superiority of motor over animal power.

The recent bridging of the desert by a motor stage line which cut down the former journey of days to a matter of a few hours, is a much published example of this. In the same light is the news printed in another column of the substitution of a trio of motor trucks for a string of seventy-odd pack mules which had been used for the carriage of ores for seaboard shipment in Honduras, and which reduce the travel from six days to one. All of which furnishes the best possible recommendation for the commercial motor, in that those who are applying it in frontier work find it the solution of a troublesome problem, and that its advertisement is thus made world-wide and practical rather than local and dependent on the efforts of the press agent. As its potency becomes better known the motor truck will carry good roads into the hearts of benighted countries and thus add to the enlightment of the world. For if one such truck will do the work of a score of mules, even the mule countries must awaken.

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SEEKING THE 35 PER CENT

But the Buyer Found it Applied Only to Justasgoods—His Interesting Experiences.

Having visited a "protective league" and a "buyers' association," each of which held out glowing inducements of supplies at less than manufacturers' prices, the Motor World's "owner of a second hand car in search of equipment" found it impossible to resist the magnetism of a New York window on which "35 per cent" is emblazoned in heroic dimensions. He hoped that there he might escape the cry of "Wolf!"—that is, of "Trust"—and find instead of substituted just-as-goods the standard wares which he sought, but for which he was disinclined to pay catalogue prices, and, incidentally, learn how the less-than-list figures were made possible!

When he entered the establishment of the concern the manager, or at least the man in charge, was busily engaged in decorating the "35 per cent" window with robes, leggings, hats and the like. Everybody seemed busy about nothing in particular, and after waiting in vain for some one to wait upon him the buyer timidly approached the managing window decorator.

"Do you give 35 per cent?" he asked.

"Why, certainly," replied he with the artistic proclivities. "Don't you see our sign? What can I do for you?"

"I want to get some tires," replied the Buyer.

"We can give you anything you want cheaper than any other firm. What kind and what size of tires do you want?"

"The Blank; 30x3½-inch."

"Well, now you've got me there. I can give you any other make, but the truth of the matter is that the Blank people are not making any more thirty-three and a half now."

"Why, that is strange; I was just into the Blank company's place, and they said they had plenty of tires of that size, but would not give me a discount on them; so as I saw your sign of 35 per cent off I thought I would see what I could do with you."

"I don't understand it," said the salesman with a deprecatory wave of the hand just like a Baxter street dealer in cast-offs. "We have not been able to get any of that size. Why don't you take the Just-as-good tire. I can let you have them."

"Let's take a look at them," said the Buyer.

Mr. Salesman rummaged through a pile of pneumatics of all shapes, sizes and makes, but apparently was unable to find one of the Justasgoods. Telling the Buyer to wait a minute he dashed out of the store and returned in a few minutes with one of his pet leaders.

"The regular list price of this tire is $—, but I can let you have it for $—."

The Buyer had purchased tires before, with and without discounts, and a grammar schoolboy would not have to rack his brain long to figure out that the price the salesman named was less than 15 per cent off.

"I though you gave 35 per cent off," said he to the salesman.

"Well"—this is where the discount house, or at least its representative began to hedge—"you see we do not guarantee you 35 per cent off on everything." Referring to the catalogue: "You save an average of 35 per cent when you buy from us. Of course, there are some trust goods that we could not allow you that much—it would be more than we get ourselves. That would hardly be good business would it?"

Then he opened a catalogue of the firm and referred to the paragraph in justification.

"Couldn't you give me better prices if I were to buy a set of four, all complete?"

"Well, now, that is different," acknowledged the salesman, brightening up a bit. "I can on the Justasgood tires, because, you see, they are not in the trust. How would an additional 5 per cent strike you?"

"How can you afford to give such discounts on tires if the manufacturers don't?" politely inquired the Buyer.

"If you want to know such things as that you will have to see the general manager of our downtown store!" snapped the salesman.

The Buyer really wanted to know so badly that he called to see the manager. But business was evidently slack at the downtown establishment, as the general manager had gone to shoot ducks at Barnegat Bay. In his absence, and after varying processes of evolution, however, the Buyer found himself in tow of a salesman, whose curly locks of auburn hue were his most irresistible characteristic. Practically the same tactics were assumed as at the uptown establishment. It was impossible to get any of the Blank tires, but they had Justasgoods in quantity, and also they recommended highly a German tire which they could supply. No extra 5 per cent, however, was forthcoming. The curly-haired salesman was willing to incur the displeasure of the firm by letting the Buyer "get next" a money saving proposition.

"You said you wanted some lamps?" interrogated the salesman. "Now, I would not advise you to buy the Douse or the Glimmer; not that they are not all right, mind you, but because they are in a trust and it is impossible for us to give you 35 per cent off. If we did the firm would lose money, and, furthermore, the manufacturers would cut off our supply if they discovered we were cutting prices. Now, here is a lamp—one of the French kind that never sells less than a hundred—we can let you have it for $— for the pair, without a generator, or $— complete."

The Buyer examined the glittering array spread before him. Each headlight had a little nameplate bearing the name of the firm in whose store he was.

"I thought you said these were French lamps. Then, how is it you have your nameplate on it?' he asked.

"They are French lamps—that is, of the French type—but they are made expressly for us," was his explanation. "Now, I'll tell you what I'll do. If you'll promise to place the order for the tires I'll quote you a price on the lamps that will make you think you paid for beer but got champagne instead. How 'bout it?"

"All right," acquiesced the Buyer.

"I'll let you have the lamps, complete with a generator, for $——," naming a ridiculously low figure.

The salesman with the twist auburn locks was evi lently pleased with the good sale. His face bore an unmistakable grin and he whistled a bar of "Tammany." Visions of a long looked for "raise" probably flashed through his brain. Anyway, he was communicative to a certain degree.

"It's just this way," he replied in answer to the questions concerning discounts. "Suppose you are in business. You sell three lots of goods a month and you realize a profit of 100 per cent. You sell at net prices, but your sales are few and far between. I am in the same business. I buy my stock in larger quantities and advertise to sell at a big discount. My profit is the same as yours, but I am willing to divide with the buyer. I only make half as much as you, but instead of three sales a month I make three hundred. Now, who is going to make the more money, you or I? There is only one side to the question. As I told you before, on account of the tire trust, the supplies trust and numerous other trusts, we cannot quote you a straight discount of 35 per cent on everything we sell, but as we can offer a discount of 50 per cent, or sometimes even 75 per cent on other things, goods that we have made expressly for us and equal in every respect to the trust product, why it is obvious that you are going to save an average of more than 35 per cent if you buy from us all the time."

"But say, old man," exclaimed the salesman, patting the Buyer on the shoulder—a familiarity some clerks indulge in when they have something important to tell you and whisper so no one will overhear—"your supplies are going to cost you quite a sum of money, and it evident that before you get through equipping your car you will run up something of a bill. Now, if you could get rid of it, we have a good car here—it belongs to the manager—that we can let you have at a figure that will give you another mild case of locomotor taxia. It is fully equipped and you won't have to spend a cent for that sort of thing."

"I thought you only sold supplies," naturally exclaimed the Buyer, kind of surprised.

"So we do! So we do! But this car belongs to the manager, and as he has no further use for it he wants to get rid of it. Brand new last spring; two cylinder 16 horsepower, but it really develops more than that, and will take any hill in these parts on the high. The manager paid something like $1,400 for it, and this year has spent over a thousand for improvements. Ah! but say, it is a beauty. If you can sell your car you can get this out, all complete, for a mere 'widder's mite.'

"How much?" asked the Buyer.

"Oh, I do not know; but if you'll come around Monday morning at, say 10, why the manager and you can fix it up between yourselves."

The Buyer is still considering the matter!

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When Touring is a Not Unmixed Pleasure.



ONE OF THE GOOD(?) ROADS ENCOUNTERED BY MR. AND MRS. H. G. WOODWARD NOW EN ROUTE FROM MAINE TO ALABAMA.

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FREEZING PROBLEM SOLVED

Results of Souther's Experiments with Anti-Freezing Mixtures and his Recommendations.

(Reprinted by request.)

During the last severe winter I made some practical experiments in the way of learning what mixture could be used in the cooling system of an automobile that would prevent freezing and at the same time not be in any danger of injuring any part of the automobile.

Various salts, glycerine and wood alcohol were considered. Wood alcohol was chosen for the first experiment because there was not the slightest chance of its injuring the machine. The success was such and the duration of the test was so long that nothing else was tried.

The character of the experiment conducted was this:

First—A set of laboratory freezing experiments to determine what percentages would freeze under artificial conditions. This showed at once that it was possible to use wood alcohol and water and resist almost any degree of cold.

Second—The next question to answer was whether or not the wood alcohol would separate from the water and waste away so fast that the scheme would be too expensive. Of course, this possibility amounted to but very little in extremely cold weather, but in mild days it was felt that considerable alcohol might be lost.

To demonstrate this point a water cooled machine was taken, and about 18 per cent. of wood alcohol was added to the mixture. The whole system contained about seven gallons.

Various experiments were made by connecting a bottle with the top of the radiator into which a pipe led from above the water level, the idea being that any vapor formed would rise into the cold bottle and condense. It was found that, except under extreme conditions, no vapor at all arose. By extreme conditions, I mean any mild day, allowing the machine to run standing still, there being no fan for cooling.

This immediately led to the thought that it might be possible to entirely close the system in cold weather, thus obviating any chance of loss by boiling away. This was done and a pressure gauge put on and connected with the system. The highest pressure obtained at any time and under very severe conditions was six pounds.

This means that there are some machines that can be run with the use of alcohol without any loss whatever, there being a certain number of makes that run with a closed system. In my own case, I added some 30 per cent. of alcohol and found 20 per cent. remaining at the end of thirty days.

It is also quite possible that many machines can be run with a closed system that now have relief tubes. The safest way to find this out in an inexpensive manner is to

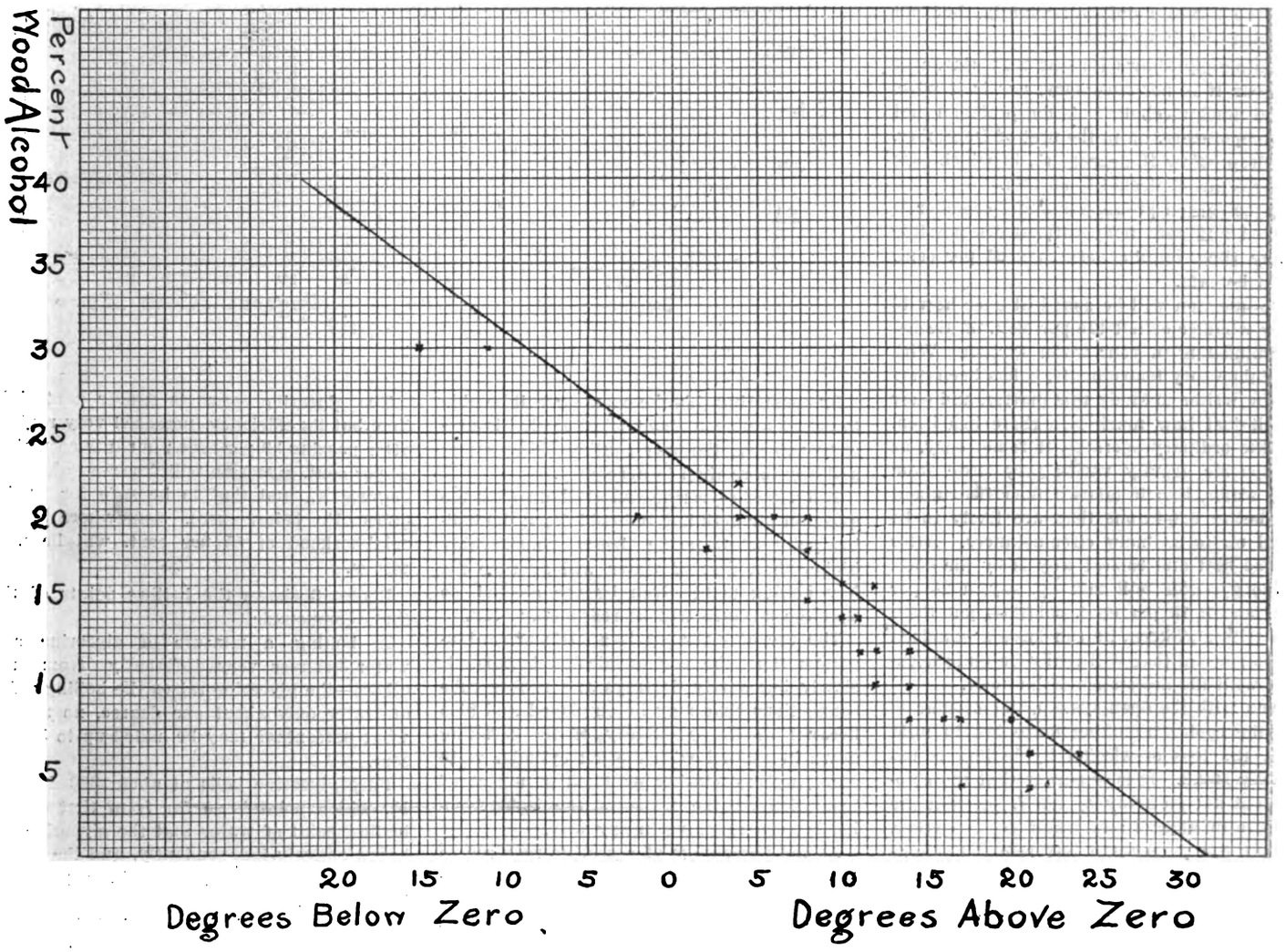


Fig. 1.

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take a small bit of rubber tubing, fitting the end of the blow-off over the tube lightly. Any pressure that would injure the machine at all would blow this off and prevent injury.

Later in the season, when the temperature was as low as 15 degrees F. below zero, 33 per cent. of alcohol resisted freezing perfectly, even when the car was left out of doors over night.

During October, with the temperature around 50 degrees F. and 60 degrees F., I used 32 per cent. of alcohol, with a result that the mixture did boil slightly, but not enough to be dangerous.

This simply shows that at that season of the year it is not necessary, nor is it wise, to add much alcohol. It is not probable that the temperature, up to the first of December, will drop below 10 degrees F., in which case 15 per cent. of alcohol is enough.

As the season progresses and December is reached and zero temperatures are possible at any time, nothing less than 25 per cent. would be safe.

The question will be asked at once how to know whether or not the per cent. of alcohol is diminishing in your water system. With nice laboratory instruments, it has been easy for the writer to study this matter, and easy to tell just how much loss there has been. For the ordinary operator, it is not easy, as the specific gravity varies very little from pure water, and it takes a finer instrument and better conditions than are likely to be found under ordinary circumstances. After all, the best and easiest way is by the odor. If the operator will mix up, say, a 20 per cent. and a 10 per cent. solution, put them in bottles and keep, he can have a standard of comparison that will really be quite accurate, with the assistance of his nose.

Even with the open system, the circulation and the cooler becoming quite hot in mild days, the loss of alcohol by boiling is extremely small. It is apparent that the alcohol does not go away by itself, but that the mixture of alcohol and water goes together, so that the percentage left remains practically the same.

Simultaneous with this practical using test another freezing experiment was carried out.

A number of test tubes were made up containing varying percentages of alcohol all the way from 4 per cent. up to 30 per cent. in steps of 2 per cent. These were placed in a basket outside of a window in a very cold place, and in the basket also a maximum and minimum thermometer. At 7 o'clock each morning the tubes were examined and the highest percentage of alcohol frozen noted. The results from slow and natural freezing like this, and duplicating the conditions of actual use, were a little different from the artificial laboratory freezing experiments.

The results obtained are shown on the accompanying diagram, Figure 1. In drawing this curve I have been conservative, and the results possible are a little bit better than shown by the table.

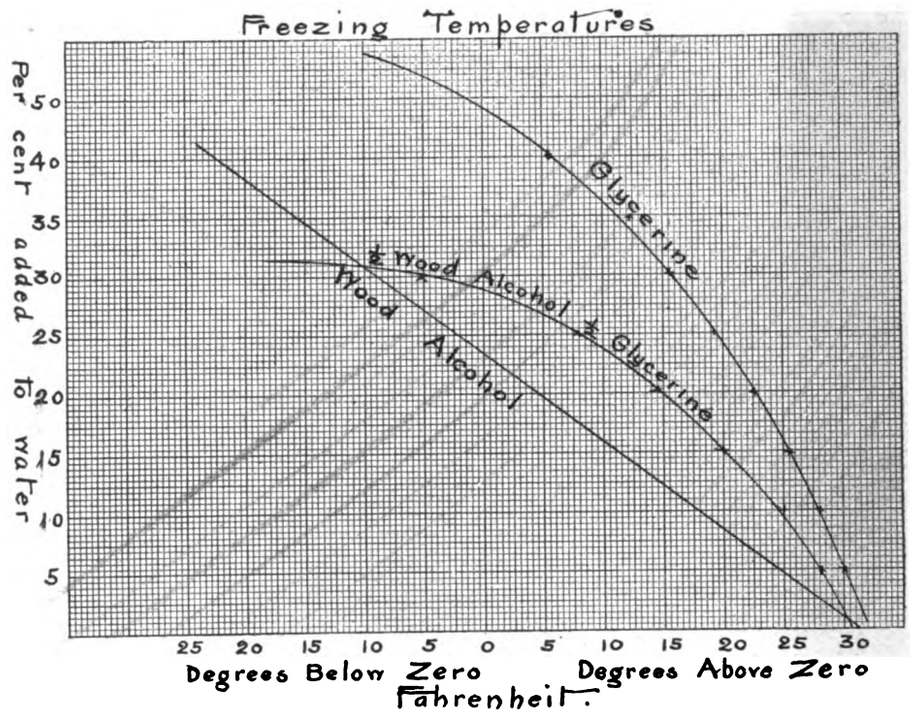


Fig. 2.

By consulting this the operator will be able to see at a glance about what alcohol is necessary to use, the only caution being not to add any more than is necessary.

The use of glycerine and alcohol solves the question for both hot and cold days; the boiling point of glycerine being considerably higher than that of water will average the low boiling point given by the alcohol, so that the mixture will be reasonably high.

The use of glycerine is a little more dangerous than the use of alcohol because it slowly but surely destroys any rubber tube connections that may be employed and also because of the possibility of its breaking down in contact with the hot cylinder wall, and partially closing or making a sort of insulation on the walls of the iron. Alcohol is not dangerous in any way.

As the percentage of glycerine required to meet a given temperature is very much larger than the percentage of alcohol required, and the cost is $2 a gallon, against 75 cents for wood alcohol, it occurred to me that a mixture of alcohol and glycerine would, perhaps, after all, meet all objections best, and this has been tried.

The accompanying diagram, Figure 2, shows the curves for the freezing of various percentages of wood alcohol added to water, a mixture of half alcohol and half glycerine added to water, and a mixture of pure glycerine added to water.

One peculiarity in these curves will be noticed at once; that the wood alcohol curve is nearly a straight line; that the efficiency of the wood alcohol and glycerine mixture in meeting freezing temperatures increases very rapidly with an increase of percentage, and at about 30 per cent. is quite as efficient as the wood alcohol alone. This mixture is practically good for 10 degrees below zero.

The glycerine curve is nearer a straight line, but its efficiency increased very rapidly after passing 30 per cent.; but it is seen that 30 per cent. glycerine will freeze at about 15 degrees F., and that to be safe for 10 degrees F. below zero, somewhere in the neighborhood of 55 per cent. will be necessary.

Figure 3 shows the boiling points of the three compounds.

In boiling, a mixture of glycerine and water behaves very differently from the others—the glycerine raises the boiling point of water only about one degree, no matter what percentage may be added up to 50 per cent.

Pure glycerine boils at about 330 degrees F., which point is so far from that of the boiling point of water that the glycerine behaves entirely independently, and the water boils, leaving the glycerine in a perfectly liquid state.

The mixture of half wood alcohol and half glycerine is decidedly better so far as boiling is concerned with the pure alcohol mixture.

From these results, it is seen that the half and half mixture with water is very good as far as freezing is concerned, and, also, fairly good as to boiling.

It, therefore, seems to me that if the half and half mixture is used, the operator will get the best results adding a small quantity of wood alcohol from time to time, as the weather gets colder, to reduce the freezing temperature. The glycerine will stay there all the time as a constant without loss, and insure against any moderate freezing temperatures.

If all glycerine is used, then a very large percentage is seen to be necessary. It is scarcely worth while to add less than 35 or

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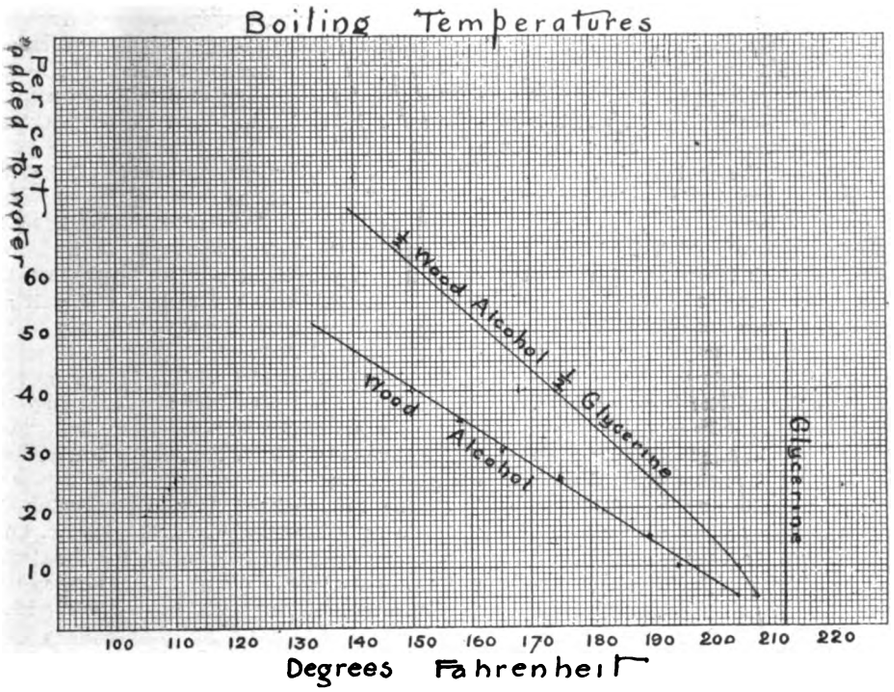


Fig. 3.

40 per cent., which will suffice for 5 degrees or 10 degrees F.

The right way to handle the mixture is to find out the equation for your own car, using all the alcohol you can possibly stand and not boil the mixtures on the mild days sure to be met with in winter in this clime. Some machines will stand all alcohol—that is, mixed with water—others will not. and glycerine must be used to keep up the boiling point.

Any number of chemical solutions are advertised in the market. It is quite possible that all of them will prevent freezing. I am not able to say to the contrary. One thing must be remembered, however, and that is every salt dissolved in water forms an electrolyte through which electric currents pass with the greatest readiness. Unless the entire system of water cooling surface is of exactly the same metal one or the other of the different metals is sure to dissolve. A cooling system may last a year or two, but sooner or later the leaks and other fatal results of electrolysis will be felt and some part of the system will disintegrate, the real cause of which rarely is suspected. These remarks apply to every chemical soluble in water that can possibly be used to advantage as far as lowering the freezing point is concerned. It is also a not unusual experience to discover that some of the anti-freezing chemicals have left a plasterlike deposit in the bottom of the tanks that finds it way into the pipes or tubes, and actually cakes therein.

If I sought to purchase a second hand car, one of the first questions I would ask would be, "Have you ever used in your cooler salt of any kind to prevent freezing?" Given an affirmative reply, I would not accept the car at any price.

There is certainly no reason, with these data before one, why a water cooled machine should not be run in any weather, and even left in a cold barn throughout the entire winter. It fairly may be said that the freezing problem is settled. HENRY SOUTHER.

Automobile Line for Jamaica

Kenneth A. Skinner, president of the Boston Automobile Dealers' Association, will shortly leave for Jamaica, West Indies, taking with him four or five touring cars. He intends establishing a passenger and baggage line on the island, and will work in conjunction with hotel men in Jamaica, who believe that there is a great field for the automobile as a means of transportation. The railroad facilities on the island are not of the best, and street railways are few and limited to the larger towns. To go to any other place requires the use of a slow carriage or a horse for horseback riding. The roads are excellent, being made of hand crushed limestone. They are smooth, fairly level and wide enough for ordinary purposes. Scattered over Jamaica are many delightful resorts, and on the west coast the climate is especially fine for invalids. To reach some of these resorts is, however, a very long and tedious journey by carriage or horseback. By automobile, it is reasoned, it could be made in a very short time and with much greater ease.

How the Parisians will Study.

It has been decided by the Paris Chamber of Commerce to include a course in practical automobile construction in the curriculum of the Ecole Supèrieure Pratique de Commerce et d'Industrie. The course will take the form of directed visits to various factories, the first of which recently occurred, when a group of fifty students drove to the Panhard factory in machines loaned for the occasion by the company.

ABOUT TWO-CYCLE ENGINES

The Principles that are Involved and the Far-reaching Results that are Sought.

In the development of the internal combustion motor common practice has at length, and after not a little experimentation along other lines, settled upon the sequence or cycle of events which is carried out in the most prevalent type of machine using what is known as the Bau De Rochas, or Otto cycle. The four steps which comprise this cycle are, first, induction of the charge of carburetted air; second, its compression to a tension of several atmospheres; third, its ignition and combustion, and fourth, the release and exhaustion of the waste products of combustion. In the true Otto cycle a complete stroke of the piston is devoted to each of these steps, thus necessitating the employment of four piston strokes, corresponding to two revolutions of the crank shaft, for the completion of one cycle.

In an effort to increase the number of working strokes in proportion to the number of revolutions of the crank shaft a motor was constructed many years ago in which there were two pistons, working in separate cylinders, the one fulfilling the offices of the first half of the cycle, and the other those of the second. That is to say, in one of the cylinders the charge was compressed, and from it was forced into the second, or working, cylinder when the piston of the latter was at the outer end of its stroke, only to be further compressed and ignited there in the usual way. From this arrangement the natural outgrowth was the two cycle motor of the present day, in which, instead of a pair of cylinders being employed, a single one equipped with a double acting piston is used. Thus in effect the four cycle principle is still maintained, one-half of the operation being accomplished on one side of the piston and the remainder on the other side, while its duration is reduced to two piston strokes.

Considering the action of the gases within the working, or power, end of the cylinder for a moment, the chief point of difference between this and the older type is at once apparent, for where in the first case one entire out stroke of the piston is devoted to the induction of the charge, and one entire in stroke is devoted to the expulsion of the burned gases, in the second every out stroke is a working stroke, and at least a portion of every in stroke must be devoted to the reception and compression of the fresh charge. Thus, in order properly to dispose of the exhaust, the working charge must evidently be relieved before it has had opportunity to expend the full measure of its effort, and the exhaust period must be terminated at some point during the in stroke.

Paradoxical as it may seem to the uninitiated, the two functions of exhaust and inlet are, in practice, carried on at one and the same time. Instead of this resulting in a confusion of the two elements, the burned and

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unburned gases, as might supposedly be the result, this has a decidedly beneficial effect on the general action of the engine, as presently will be shown. Thus, in actual practice, the sequence of operation in the two cycle motor of the common type works out as follows: First, a charge is forced into the cylinder through a port which has been uncovered by the piston in its travel, or which has been opened by a valve. Under pressure from the crank case, and being further compressed by the upward motion of the piston, it is ignited at or near the point of reversal of the piston's motion. The subsequent combustion and expansion is carried out until the piston in its travel uncovers a port in the cylinder wall, permitting the gases to escape and immediately lowering the pressure within the cylinder. An instant later the piston, at or nearly at the end of its out stroke, uncovers a second port on the opposite side of the cylinder from the exhaust, and permits a second charge of fresh gas to be forced in. This in turn is compressed, ignited and exhausted in the same manner, and the cycle is repeated over and over again indfinitely.

To consider the action which goes on within the working end of the cylinder a little more closely, it is evident that even were the exhaust port of the same area as the piston, which is the ideal condition, the effect of the release could only be to reduce the pressure within the cylinder to that of the exhaust passage—that is to say, to reduce it to atmospheric pressure under ordinary conditions. It could not in any way be supposed to rid the cylinder of all of the waste gases. Thus, when the fresh charge is admitted, it must enter a cylinder filled with burned gases at atmospheric pressure, and were the exhaust to terminate with the admission of the fresh charge this remnant of the old charge would simply act as an inert dilutant of the new. In practice, however, the exhaust port is allowed to remain open for a time after the fresh charge is admitted, and the resulting effect is that the latter, instead of commingling with the former, tends to remain independent of it, and to force it out of the cylinder by the very intensity of its inrush. Thus the incoming gas, usually directed by deflector plates or vanes which are arranged to increase the natural tendency, swirls throughout the cylinder and cleans it of the greater portion of the useless contents, securing in this way what is called a scavenging effect.

Coming, then, to the duties of the compression end of the cylinder, it is evident that the action carried on there is, first, that of drawing in a charge of carburetted gas in suitable proportion, and then of compressing it upon the working stroke of the piston to sufficient degree so that upon the port to the working end of the cylinder being uncovered the gas will enter with a velocity which will serve to scavenge the cylinder and at th same time fill it with combustible vapor.

The habit which some two cycle motors have of "four cycling" has been the cause of considerable learned controversy, much of which has been not at all to the point. The real cause of the phenomenon undoubtedly is attributable solely to the reduction in the pressure of the incoming charge consequent upon throttling, governed in part by a considerably restricted exhaust port, which is provided in some motors in an effort to reduce the duration of the period of exhaust. In some measure as well this is also responsible for the back-firing propensities of such motors as do not use a high initial compression, and in which the uncovering of the inlet port simply serves to ignite the incoming charge either from contact with the incandescent exhaust, at the port, or from the latter forcing its way down toward the crank case against the inferior pressure there.

Concerning the merits of the two cycle motor, it is evident that, granting the possibility of completely exhausting the old charge in each case and of taking in a full charge of fresh gas, the power output would be nearly double that of the four cycle motor of the same dimensions. In practice, however, these two objects can only be approximated, how closely is not known, and the power developed is consequently restricted to a greater or less extent. In addition to this, the two cycle engine of one cylinder gives a turning moment which is precisely like that of a four cycle motor of two cylinders; the two cylinder, two cycle gives a turning moment equivalent to that of a four cylinder four cycle motor, and so on. Thus the torque of the two cycle motor is subject to only half the variations of that of the four cycle, and the power per pound weight, though not double that of the more common type, may be said to approximate it and to approach that value as a limit.

Of the comparative efficiencies of the two types but little is known in the way of authoritative data, except that the advantage up to the present time lies with the four cycle type. The greater thermal efficiency always will be to the credit of the four cycle type on account of its longer period of expansion and consequent increased use of the burning gases; but in motor car construction thermal efficiency plays but a comparatively insignificant role on account of the small total consumption, and so its consideration may be set aside, at least until such time as the introduction of very large units or a genuine threat of a fuel famine shall render a finer economy needful. But, on the other hand, disregarding questions of close theory, to increase the power of the motor without increasing its weight, even without increasing its cost proportionately, is something worth striving for, and if that gain is made without losing anything in flexibility or reliability or ease of regulaton of the motor, then the gain to the industry is very great. Also, the gain to the user is, roughly speaking, a gain of 100 per cent in power in practical efficiency and in all around utility.

The Reward for the "Rubber-neck."

"A reward will be paid for information leading to discovery of present whereabouts of three sightseeing automobiles, two with capacity of forty passengers each and terraced; one twenty-four passenger capacity; formerly operated by International Auto Sight Seeing Co.; manufactured by Vehicle Equipment Co. Send information to No. 27 Pine street, eleventh floor."

This advertisement appeared in all the New York City dailies one morning this week, but before it appeared several gum-shoed sleuths with Sherlock Holmes instincts had been sent to scour the country in search of the missing "rubberneck wagons," which, it appears, were leased about a year ago to the International Auto Sight Seeing Co. by the Vehicle Equipment Co. The lawyer on Pine street refused information; but that three immense cars of the sort could have been "lost" or have "strayed" or been stolen is a striking commentary.

The International Auto Sight Seeing Co. appears in the telephone book with No. 1,404 Broadway as its address. This is the Casino Theatre, where it was said the other day that the auto company used to start its machines from that corner and sold tickets there.

"They had no offices here, however," it was said. "Perhaps it was next door."

At No. 1,402 it was said that that address had sometimes been given as the headquarters of the International Auto Sight Seeing Co., but that the concern had never rented offices. At No. 113 West Thirty-eighth street, to which the search for the missing "rubber bubbles" led, it was said by an elevator boy that the International Sight Seeing Co. had had an office on the second floor; that the concern had been managed by a Mr. Galvin and a Mr. Whitcomb, who was said to be connected with the Whitcomb Ticket Agency. It was said that Mr. Whitcomb had withdrawn from the concern and that shortly afterward Mr. Galvin's calls at the office became less frequent. After the smash of the International company's affairs most of the employes went over to the opposition company, which runs its sightseeing coaches from the Bartholdi.

At the New York Theatre, where the New York Coaching Co. has a stand, automobilemen in close touch with its affairs said that the International concern went out of business about six weeks ago.

One Cause of Lost Power.

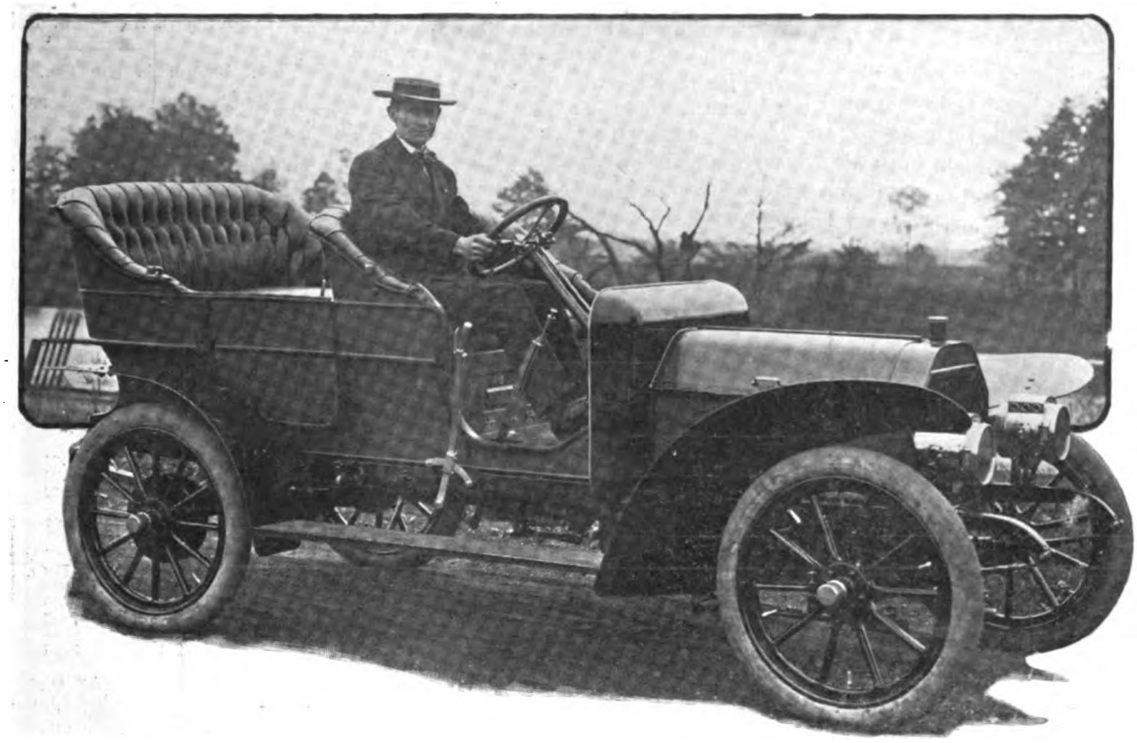
Loss of power in a car is not always the result of as serious a cause as the inexperienced owner is wont to think. In many cases it comes from no more important source than the brakes which are binding, either from poor adjustment or because of a load of mud which has been thrown into them and which they are carrying, with consequent abrasion of their surfaces.

When the Burner Becomes Clogged.

When the burners of an acetylene lamp become clogged, an easy means of freeing them is to slip the tube of a tire pump over each in turn and blow out the impediment. It is a much more satisfactory method than to poke them out with a pin, and one which is not at all likely to injure the orifices.

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Features of the First Four Cylinder Oldsmobile.



D. B. HUSS, IN THE NEW 4-CYLINDER OLDSMOBILE WHICH HE WILL EXHIBIT AT THE FOREIGN SHOWS.

If looks count, and there is no doubt of it, the new four cylinder Oldsmobile is due to obtain its full share of the count. It is a good looker and its construction is well thought out and well carried out. The front axle has been placed well forward under the radiator, giving a wheel base of 106 inches. The standard tread is 55 inches; either 52 inches or 58 inches will be furnished to order. The general design of the car is such that the tendency to stir up dust when running is very small. Weight of car, 2,200 pounds. Price $2,250.

The car is equipped with a four-cylinder vertical water cooled motor, developing 24 to 26 horse power. Cylinders, 4½ inch bore by 4¾ inch stroke. Pistons are carefully grounded, and "run in" with a belt to insure accurate fit.

The valves are mechanically operated and easily adjusted. The fly wheel is carefully marked, and an index is placed on the crank case so that the valves may be quickly and accurately timed. All bearings are of generous proportion, and quarter boxes are of babbitt lined bronze. The cylinders are cooled by means of water circulated by a gear pump. The radiator used is one of special design, using a flat tube construction. A fan placed just behind the radiator aids in cooling the motor when the machine is standing still.

The crank case is of aluminum. The lower half may be removed without disturbing the bearings, which are hung from the upper half of the case. The crank shaft, connecting rods and pistons, can, therefore, be very easily examined or removed without disturbing the hanging of the motor.

A pressed steel frame of channel section is used. In addition to the main frame, a sub-frame is provided which supports the motor and radiator. A portion of the dust pan which runs under the car, is riveted between the outside and inside members, and gives a pronounced bracing effect. A portion of the dust pan is removable, so that the motor may be very easily examined, yet at the same time it is firmly fastened when in place and absolutely prevents the dust, mud and water from reaching the working parts of the mechanism. Both engine and transmission are aligned upon the sub-frame, and all working parts may be removed without disturbing the hanging of the crank or transmission cases.

The transmission is of the sliding gear type having three speeds forward and one reverse. All of the gears are made of special high carbon steel, tempered and hardened. The control is of the selective type, all changes being made with one lever.

The clutch is of the ordinary "dish pan" or cone type, and is provided with a simple spring device whereby the load may be thrown onto the motor gradually, thus doing away with any jerking motion when starting. The clutch may be thrown out by foot lever, and also by emergency brake lever.

Steering is accomplished through a worm and nut mechanism. The nut has a large wearing surface so babbitted that same may be easily replaced at any time. The spark and throttle levers are placed upon the steering post, and just beneath and at the right hand side of a 16-inch oval rim steering wheel. An accelerator pedal is also arranged in such a way that it may be used with ease when it is desired to instantly increase the speed for a short interval.

There are two brakes; one, operated by a pedal control, acting on the cardan shaft, just back of the transmission case; the other, operated by a hand lever, which "sets up" the emergency toggle joint brake upon the rear wheels. Application of this latter brake throws out clutch, disconnecting transmission from motor.

The front axle is of Olds special design, and is built of 2-inch tubing, having a ¼ inch wall. There are special large bearings upon steering connections, all these bearings being equipped with "T" handled grease cups, and protected by leather dust caps. The steering connections and gear links are adjustable so that the wheels may be easily lined up at any time. Axle is dropped in center to protect the fly wheel and other parts beneath the car. The gear axle is equipped with Timken roller bearings throughout.

Bevel gear drive is used, having a ratio of 3 to 1. Ratio of 3½ to 1 or 4 to 1 may be furnished on special order.

Large, half elliptical springs made of the best stock obtainable are used, the front being 36 inches long, and rear 48 inches.

The wheels have 10 spokes in front, and 12 in the rear, and are equipped with 32 inch by 3½ inch tires. Four inch tires for extraordinary service can be had on special order. Running board and mud guard irons instead of being riveted on are drawn into taper sockets upon side members of frame and are easily removable.

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STRIVING FOR COMPACTNESS

In the Effort, these Germans Evolve Novel Arrangement of Valves and Carburetter.

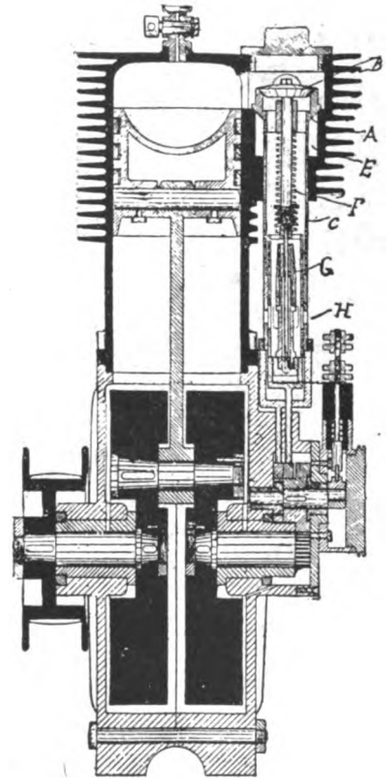
A point which has been considerably discussed among gas engine builders is that of the relative arrangement of the inlet and exhaust valves. By some it is thought to be of great value to have the two ports placed in such close proximity to one another that each will receive a measure of effect from the other. That is to say, the heat of the exhaust valve is supposed to have a good effect upon the carburation of the incoming gases, while, on the other hand, the inrush of the cool, fresh gas of the new charge will tend to lower the temperature of the exhaust valve, thereby prolonging its life. Others claim that despite the benefits to be derived from this arrangement the carburation can as well be effected in the carburetter alone, and that the heat in the vicinity of the inlet to the cylinder tends so to increase the volume of the incoming gas that the power of the explosion will be measurably weakened.

Whatever may be the rights of the case, common practice still shows more or less divergence on this point, and many constructors, particularly those who are making small motors, still adhere to the practice of placing the two ports in close proximity. Among these is a firm of German manufacturers which has revived the practice at one time suggested, if not actually carried into effect, of placing the inlet within the exhaust, thereby obtaining the maximum possible effect. In this particular motor a distinctive novelty is introduced in that the carburetter is carried within the hollow stem of the exhaust valve, thereby rendering it an integral part of the motor instead of retaining it as a more or less detached auxiliary. The motor is especially designed for motor bicycle work, but its susceptibility to multiple-unit construction and its compactness would seem to recommend it to the consideration of the builder of light cars.

As shown in the accompanying cross-section, the exhaust valve, instead of comprising a body portion attached to a stem of small diameter, is arranged in the form of an annular ring surrounding a hollow tube. This is actuated and timed in the usual manner, by a cam driven by the two-to-one shaft. It is held down upon its seat by means of two springs fixed to a yoke at the side of the tubular stem C.

The seat of the inlet valve is carried in the valve A, and the valve itself, which is of the suction, or automatic, type, is held to its normal position by the spring F, which surrounds its stem. The carburetter, which is of the spray type, and fed without float chamber regulation, is located within the hollow of the exhaust valve and at its lower end. The feed is through the spray nozzle G, which is fed from a pipe outside, which is not shown. The regulation of the jet is accomplished by means of a needle valve, which is actuated by the inlet valve itself in synchronism with the cycle of the motor, so that the fuel flows only during the period of the inlet. The air intake is through the holes H.

By this means the makers have secured a very compactly designed motor, and as well have taken advantage of the opportunity to increase the radiating surface by surrounding



the single valve chamber with an additional number of radiating flanges. While the arrangement of the valves might be open to the objection of complexity, it is yet perfectly evident that the entire mechanism is confined to the one organ of distribution, and that on this account there should be less chance of its getting out of order than in a case where several sets of gears and valves are used.

Lignum Vitæ for Brake Blocks.

A novel experiment is being tried by a New York motorist, who has equipped the brakes of his car with lignum vitæ bearing blocks instead of leather or composition. The great difficulty with brakes which otherwise are well designed is that of the inordinate wear of their friction surfaces, it being a natural conclusion that the best holding brake also will prove the fastest in wearing out. For many years lignum vitæ has been used for bearings in certain classes of mill practice, where it has stood the test of time with remarkable success. In the present instance it is said that the result is even more satisfactory than was to be expected under the circumstances.

COST OF PARCEL CARRYING

Big Department Store Submit Figures Showing Economy of the Motor Delivery Wagon.

The Joseph Horne Co., owners of Pittsburg's big department store, have contributed some valuable figures to the fund of commercial vehicle development. From July 11 to October 1 last they used an Oldsmobile delivery wagon on sixty-five days, their carefully kept record of the cost of operation for that period being about as follows:

1905	Cost of Material.	Factory Chrgs at 50c an hour.	Mach. Oil at 11c gal.	Eng. Oil at 11c gal.	Gasoline at 10c gal.	Total.
July ...	.55	7.00	.22	.92	11.27	20.56
Aug. .	3.05	2.75	.22	.92	14.49	21.43
Sept. ...	3.92	4.62	.22	1.16	17.22	27.14
	7.52	14.37	.66	3.00	42.99	69.13

	Packages Delivered	Miles Run.	Trips.	Trips Lost
July	2,772	468	33	0
Aug.	2,276	715	47	0
Sept.	3,156	633	50	0
	8,204	1,816	130	0

	Av. cost per pkg.	Av. cost per mile.	Av. cost per trip
July	.0074	.044	.6230
Aug.	.0094½	.030	.4560
Sept.	.0086	.043	.5430

Average cost per package..... .0084½
Average cost per mile ..... .0380
Average cost per trip ..... .5320
Average cost per day 1.0640

Although in August the machine covered more miles than in September or July, and yet delivered less packages, this was due to the fact that twice a week it was used on different routes, usually to the furthest outlying ones, which are not so heavy in packages as in mileage. The car also covered the hilliest route with success, having at no time refused to take any and all grades on any and all routes.

Three Trucks to Replace 72 Mules.

One of the most significant applications of the automobile to commercial uses which has yet been made is in the substitution of three one and one-half ton motor trucks for a service which hitherto has been performed by seventy-two pack mules. For this purpose the Packard Motor Car Company recent made shipment of three of its standard trucks to Central America, where they will be used in the service of the New York and Honduras Rosario Mining Company, in the transportation of gold and silver concentrates from its mines near Tegucigalpa, the capital of Honduras, to San Lorenzo, on the Pacific Coast.

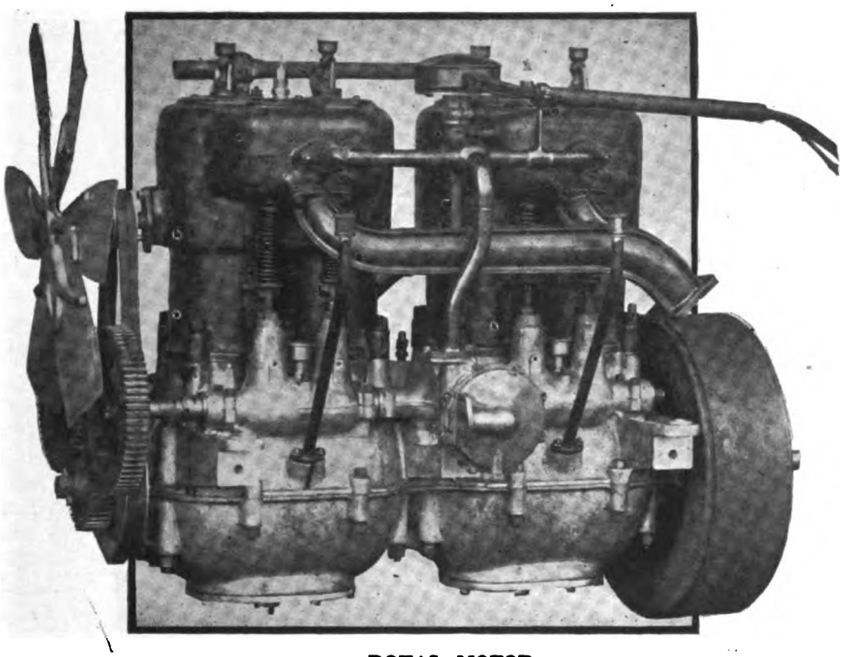
At present the work is carried on by means of pack mules, each animal carrying an average load of 250 pounds, which is equally divided in two packs. The mules require about six days to cover the distance of ninety miles. The normal carrying capacity of each of the motor trucks is 3,000 pounds, and the most conservative estimate easily places the time consumed in making the journey in one day. This will be made possible by the good condition of the road on which the government of Honduras has spent over a million dollars during the last five years.

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REGARDING THE NEW ROYAL

Characteristics of the 1906 Model that Will Render its Position Secure.

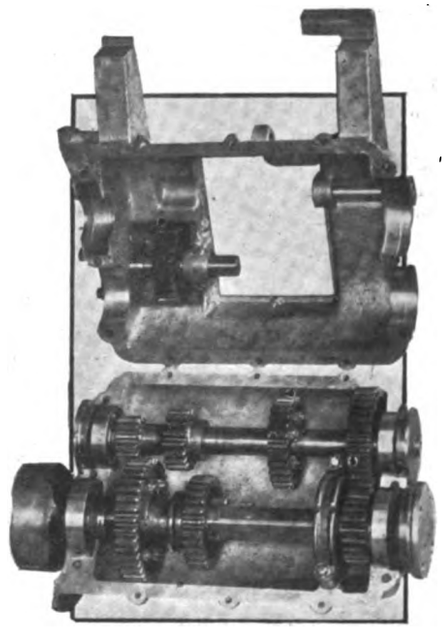
In making up the designs for their 1906 car the Royal Motor Car Company, of Cleveland, Ohio, have wisely concluded to build upon the splendid reputation of this year's work, and not to make changes merely for the sake of change. Accordingly the new model is of the four cylinder pattern, of 40 horse-power motor, of regular design, set in a steel chassis, with 110-inch wheel base. The method of control is of the simple order which is characteristic of all the new cars this year, and the mechanical parts throughout are of heavy and ample size and strength. The standard body is of the King of Belgium type, with wide side doors and roomy seating capacity. Ample storage space is provided, both for luggage and spare parts, and the tank capacity for fuel, which is 22 gallons, is sufficient for a two hundred and fifty mile trip.



ROYAL MOTOR.

An important feature in the design of the motor is that the unit type of construction is used, all auxiliaries except the coils and lubricator being mounted directly on the base, thus permitting the removal of the power plant from the chassis without disturbing the adjustment of any of the vital parts. The cylinders, which are cast in pairs, are 5 by 5½ inches bore and stroke, and have the inlet and exhaust ports oppositely disposed, the valves being interchangeable. The spark plugs are placed over the inlet valves and the commutator is mounted on a vertical shaft which lies between the two sets of cylinders, thus permitting of simple and accessible wiring. All bearings, with the exception of those on the wrist pin ends of the connecting rods, are of bronze, while the latter are of hardened steel. The crank shaft is drop forged with ground bearings. All wearing parts on the cam shafts are carbonized and hardened, the shafts being driven by fibre gears external to the case.

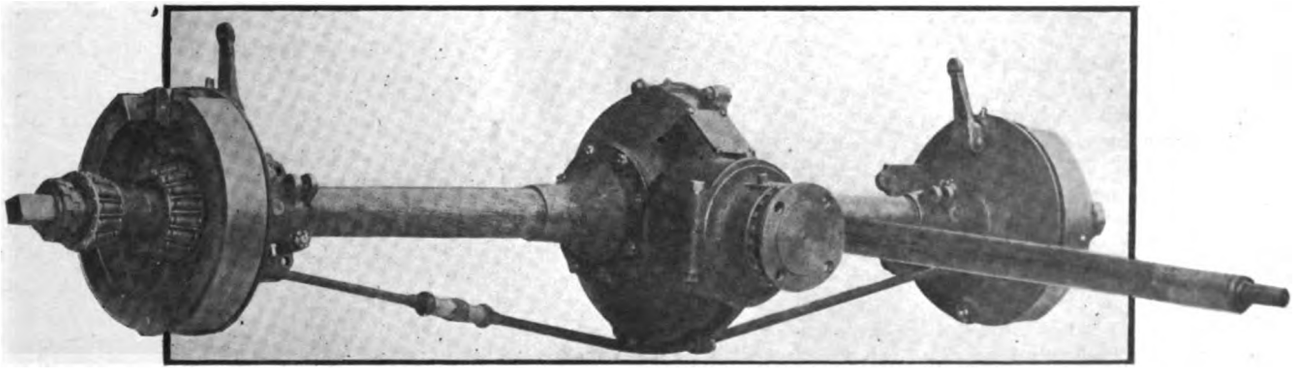
The water circulation to the radiator is effected by means of a gear driven pump having hardened steel gears and shaft. The fan and its mechanism are carried entirely on the motor. The carburetter differs from that used in last year's model in that the jacket instead of enclosing simply the mixing chamber, extends over the entire mixing and throttling chambers, the jacket water being used for heating instead of the exhaust gases.



ROYAL GEARS.

The crank shaft is flanged at the rear end to take on the fly wheel, which is of generous proportions and turned out to receeive the leather-faced cone clutch.

Between the clutch and the transmission a full universal joint is placed to allow for any possible disalignment of the machine, and to facilitate dismounting. The transmission, which is of the orthodox three-speed type, is built on the same general lines as were used in last year's car, except that ball bearings are used on both driving and lay shafts. The gears, which are specially treated, are bolted to flanges, which are made integral with the shafts and are characterized by large pitch and long faces. The lay shaft runs continuously, but at slow speed. The changes are obtained by a simple mechanism, there being but a single sliding member,



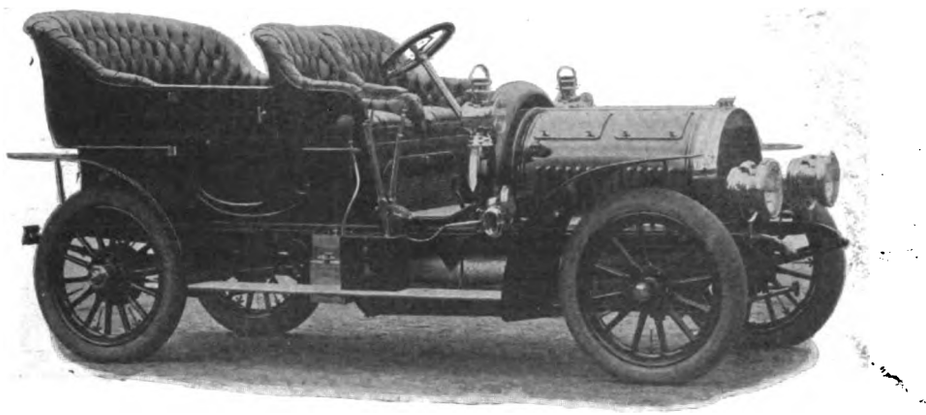
ROYAL REAR AXLE CONSTRUCTION.

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which locks with the driving shaft for direct drive.

The final drive is by a propeller shaft, having hardened joints throughout. The rear axle, which is mounted in roller bearings, has the good point of taking its load on the stationary tube instead of on the moving parts, thereby relieving the latter from all strains other than those of driving. The front axle also is tubular, of heavy construction, and the front wheels are mounted on roller bearings similar to those used in the rear.

The steering gear is of the ordinary and thoroughly approved worm and segment type, with hardened bearing surfaces, and all levers and other portions of the control mechanism



1906 ROYAL TOURING CAR.

are either bolted or fastened by means of squared ends, to forestall any possibility of their working loose. The frame is of pressed steel, braced to give the required staunchness and strength, and the spring hangers are drop forgings.

The positive pressure feed oiler and the spark coil are mounted on the dash, which is cast in aluminum with the necessary lugs fashioned into it. The radiator is of the well-known cellular pattern and is of so great capacity that the engine can be run with it only half filled without over-heating. In general appearance the machine is strong looking, elegant and thoroughly American.

Two-Cycle Car from the Coast.

It is so rare that a car of Pacific Coast origin reaches the East that the recent appearance in these parts of the Sunset automobile was almost in the nature of an event. During the past year a number of them have been made by the Sunset Automobile Company of San Francisco, and they have behaved so well in that hilly country that several visitors induced the inventor to bring one of the cars to the East with a view to its manufacture here. They consider it a revelation in the two-cycle type and a Motor World man who was given a short ride in it can vouch for it that its action—its smoothness and its silence—left nothing to be desired.

The motor, which is the particularly novel feature of the car, is of the two-cylinder type, with cylinders 3½ by 4 inches, and develops 10 horsepower running at its normal speed. The peculiar feature in its construction upon which the makers base their claim that it will run under all conditions of load and speed without skipping or slowing back is that the ports are made extraordinarily large and are so arranged that a considerable port opening is acquired with but a comparatively slight amount of piston travel, whereby the point of release is considerably delayed without the gases being throttled in the least degree.

The cylinders are copper jacketed, the jackets being held in place at the bottom by means of an iron ring, shrunk in place and at the top, by means of a collar, screwed in place, and seating against the top of the cylinder casting, the latter being tapped out to receive the spark plugs. The general make-up of the motor is extremely simple, there being no moving parts except the piston group, the automatic valves set in the bifurcated induction pipe and the commutator handily mounted at the front of the machine. The fuel is vaporized and mixed in a single-Sherwood carburetter, which is one of the few stock parts used on the machine.

Ignition is accomplished by means of the ordinary jump spark system, but a single coil being used in conjunction with an original high tension distributor. The circulation of the cooling water is accomplished by the thermo-syphon system, so that except for the radiator fan, the motor is entirely without auxiliaries.

A planetary transmission is employed, which gives two forward speeds and a reverse, the entire control being vested in a single lever at the right of the driver's seat, which actuates a sliding double cone, which in turn raises successively each of three fingers, which serve to apply the bands for the low speed and reverse and the clutch for the high speed. As the spark control and gas levers are mounted on the steering column and the brakes, of which there are two, are both operated by pedals, the manipulation of the car is exceedingly simple.

The wheel base is very long, considering the size of the machine, being 84 inches, while the weight is but 900 pounds.

The body is of the runabout, or cross country type, with a long boot behind the seat. At the option of the user, however, a second seat may be added, which, being quite similar to the other, gives the machine the appearance of a surrey.

The makers of this car, which has found a ready market in its home State during the last year and a half, are putting it out at the remarkably low figure of $750. At present a representative is showing a demonstrating car to some interested people in the East, which may result in its introduction in this part of the country.

First 1906 Haynes Reaches New York.

The remark let fall by one of them: "I guess the Haynes Company have got it this year all right," about sums up the verdict on the 1906 Haynes car rendered by the New York sharps who had a chance to see it and in it on its appearance in this city this week, after being run over 4,000 miles by John Haynes, who was in no small degree responsible for its creation, and which included a trip over the road from Kokomo to New York City and through New England to Boston.

It has been Mr. Haynes's idea to subject the car to the widest variety of conditions, and find out what points, if any, fell short of the standard set. The "finding out" trip included stops at Toledo, Cleveland, Buffalo, Rochester, Syracuse, Utica and the intermediate town along the Mohawk Valley and down the Hudson to New York. Agents in all of the cities visited have had an opportunity to examine it and see it demonstrated and the results have been more than gratifying.

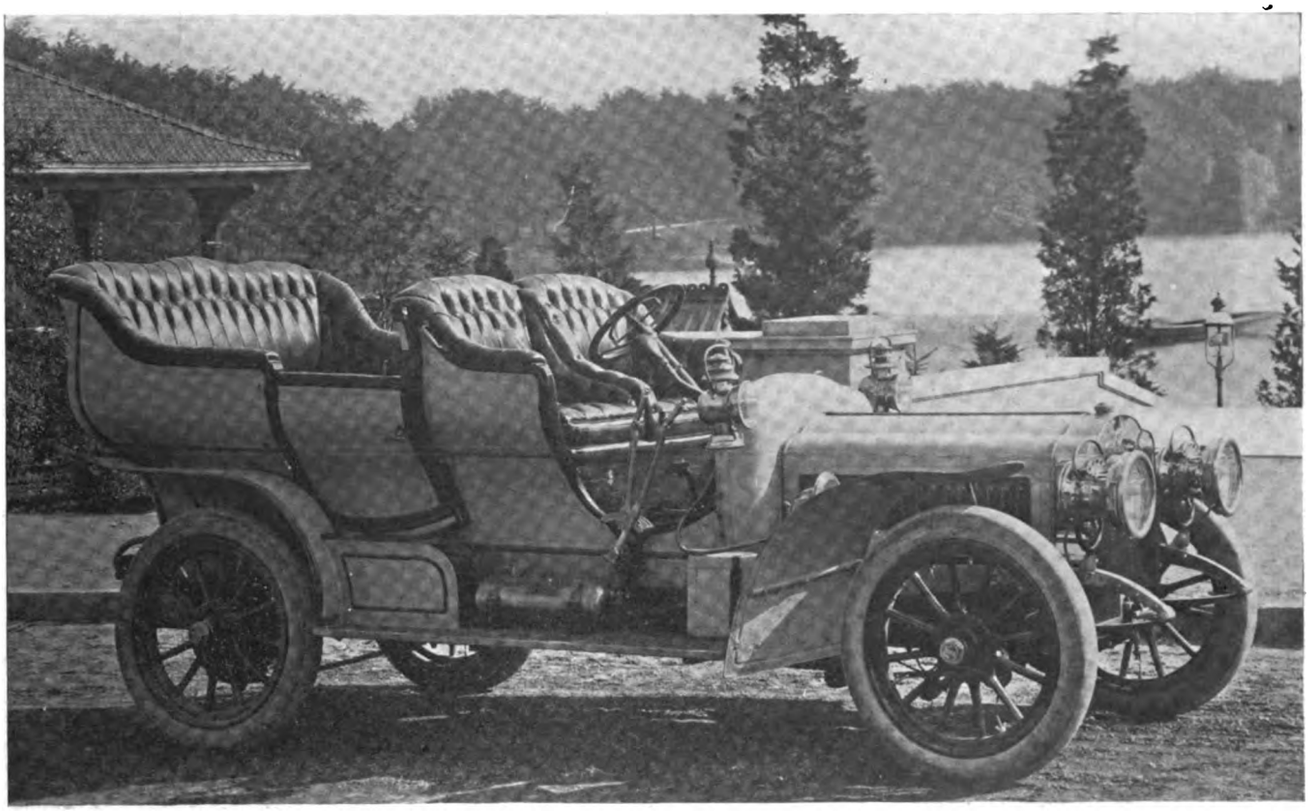
The new Haynes car at first glance gives an impression of immense power, and this impression is more than borne out by its performance. In a demonstration on Tuesday of this week, Mr. Haynes, in company with Manager F. G. Carrie, of the New York branch, sent the car over some of the worst hills and roughest roads of this vicinity in a manner that left nothing to be desired. For all its power, it is extremely flexible and the operation of the Haynes patented transmission is a revelation, the speed changes being effected with absolutely no noise and the motor picking up the work with no jerk or perceptible effort whatever. The spring suspension is good, the car riding very easily, and in short, it is a product of which the pioneer American automobile manufacturer well may be proud.

That New Yorkers are quick to realize its value is shown by the fact that orders for two cars were placed before it had been in the city scarcely long enough for them to make its acquaintance.

F. J. Wharton, of Sharon, Ohio, has purchased two 35 horsepower cars, each having a seating capacity of twelve passengers, which he proposes to operate between that town and Mercer on a three trip a day schedule. He is charging $1.25 per passenger per trip.

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How the Thomas Flyer has been Improved.



In the 1906 Thomas Flyer, which is catalogued as Model 31, there are enough of new features to make it deserving of the caption "new car," yet enough of the sterling marks of its predecessors to make it one of a well known type rather than the beginning of a new line. Of the new features which have been adopted in Model 31, the lengthening of the wheel base from 104 and 110 inches, to 118 inches, with consequent lengthening of the body and extension of the springs to provide the necessarily added elasticity to the suspension, is the most noticeable, and this, taken together with the rounding off of the corners, and lowering of the back of the rear seat, of the otherwise unaltered body, gives the machine a rangey appearance which is decidedly advantageous. Among the more essentially mechanical details which are named, may be cited the trussed frame, the sub-frame being abandoned, drop forged axles of I-beam section, increased radiating surface, special form of disc clutch, and improved transmission.

The motor which is rated at 50 horse power, is of the common type, having four independently cast cylinders of 5½ by 5½ inches bore and stroke, with jackets made integral. The valves are oppositely placed, and are mechanically operated, the suction type of admission valve heretofore used, having been abandoned. The pistons, which are packed with five eccentric rings, are scored with oil grooves which serve to distribute the lubricant which is supplied through individual feeds from the multiple oiler. The connecting rods are nickle steel forgings, and the crank shaft is a drop forging, seated in five plain bearings lubricated by chain oilers. The cam shafts are driven by external gears of combined fibre and brass structure, running under protecting shields, the shafts and cams themselves being entirely enclosed.

The jump spark system of ignition is retained, the distribution being accomplished by means of a dash board commutator as formerly, though a change in the method of wiring furnishes a considerable improvement in that system. Special provision also is made for the installation of any approved form of magneto ignition at the option of the purchaser. An automatic carburetter is provided which is regulated from the steering column, and also is automatically throttled on the withdrawal of the clutch or application of the brakes.

In the clutch, which is of the metal to metal type, fitted with a single driving disc, special provision is made for the free movement of the driving shaft when the organ is disengaged, an auxilliary thrust bearing being arranged to take up the strain of the spring, when the driving pedal is depressed. The driven member of the clutch is of manganese bronze, packed with cork cushions which are introduced in recesses for the purpose of easing the starting load. The two driving members are of cast grey iron. In the transmission, which is supplied with four forward speeds in the new model, Hess-Bright bearings are used at all points except at the forward end of the main shaft where a roller bearing is used. The gears are made with considerably wider face than formerly, 1¼ inch being the new dimension as against ⅞ inch in the other types. The changes of gear are obtained by means of the selective system, two sliding sets being used, actuated by a single lever moving over a gridiron segment. In the differential, which is enclosed in the gear case, an improvement has been made by the introduction of a new set of pinions, thereby considerably increasing the strength of the member.

The double chain drive is still retained, and so too, is the safety device, or ratchet sprag, which is dropped into action by a small lever at the right of the driver. Of brakes, there are four, one pair acting upon the outside, of a pair of drums attached to the rear wheels, and the other, being of the internal expanding type, acting within the same drums. One pair, those acting internally, are actuated by a foot pedal, while the others are applied by the emergency lever, which also applies the first set as well, and withdraws the clutch. Both brakes are interconnected with the clutch, as this would imply, and this feature, coupled with the method of interlocking the gears and throttling the motor upon the withdrawal of the clutch, makes the "fool proofing" element particularly strong.

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AUTUMN IN THE HEART OF THE ORANGE MOUNTAINS OF NEW JERSEY.

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SOMETHING FOR EVERYONE

Reo 'Bus Gets Chief Award but all other Economy Testers Obtain Souvenirs.

As was expected, honors in the what was intended to be a national economy test promoted by the New York Motor Club were generously distributed. The awards were made public by the contest committee on Thursday of last week. Of the seven prizes three were won by the Reo omnibus, driven by R. I. Lockwood; two by the Reo runabout, driven by C. C. Singer; one by the Compound, driven by F. C. Carter, and one by the Marmon, driven by A. Largensen.

The "national" trophy for the most economical showing per passenger was given to the Reo bus, its per capita rate for the six days being $2.93. The same vehicle also won the trophy for the best showing per capita, including tire changes, with an average cost per mile of a little over 4 mills. The bus also was given another prize for consuming the least amount of gasolene. It was charged with $16 worth, and as it carried ten souls, the average cost was reduced to $1.60.

For having the least ignition trouble the Reo runabout was presented with a prize donated by A. L. McMurtry. The runabout claimed a perfect score on this point which was not disputed. This car also won the gold medal for the best showing in Classes A and B for vehicles selling under $1,500. The per capita cost, with four passengers carried, was $3.38. The silver medal in this class was given to the Compound car, driven by Carter, with a rate of $3.72.

In classes C and D, for cars selling between $1,500 and $3,500, the Reo bus naturally made the best showing, but the committee had doubtless foreseen the outcome and had prepared itself by ruling that any car that won the "national" trophy would be ineligible to any of the other class prizes. Therefore the club saved one of its medals. The second prize, in consequence, goes to the Marmon, with an average of $4.58.

As the Oldsmobile, the Wayne and the other Compound were presented with certificates of "honorable mention," every car that finished the test figures in the awards. Thus everybody was pleased, especially the officials who have announced that the test proved such a success that it would be made an annual affair.

The detailed tables of the performance of each car are said to be completed, but for some reason or other, are being held back.

Treat Him Squarely, Says McClintock.

"The best way to treat the overspeeding automobile driver is to use him squarely—to treat him in a manner above board," said Highway Commissioner W. E. McClintock, of Chelsea, at a meeting of the road builders of Massachusetts held in Brockton last week. "If those who try to regulate overspeeding would do so openly and squarely I am sure much better results would be obtained.

"There is some doubt as to whether the speed law is to be interpreted literally. In many places where the limit of speeding is low it is practically impossible for an automobile driver to keep his machine down. There are few automobile drivers who have not at some time exceed the speed limit. In some places the authorities recognize this difficulty of keeping down to eight or ten miles an hour and do not trouble the drivers, provided they are not going at reckless speed and seem to have in mind the welfare and safety of others. In other places we see just the opposite. There are officials in wait at every turn, stopwatch in hand, trying to get the machines going even a fraction of a second above the time limit, even though there is no danger to passersby, teams or pedestrians.

"There is a question as to which method is better. I do not believe in this lying in ambush, hiding behind hedges and trees and the sudden swooping down of an official on an automobile driver. I believe the best way is the open way. Treat the automobile driver as a man and he will treat you as a man. Let him know you mean business and mean to enforce the law, and if you go about it in the right way, in nine cases out of ten he will see that you are trying to do your duty to the best of your ability, he will understand things from your point of view, he will fall in with the idea and he will not only try to assist you in the enforcement of the law, but he will help others enforce it in other places.

"It is often the most careful driver that gets arrested for overspeeding, and the most reckless often get away. As a rule, the reckless driver will do everything possible to escape arrest; he will take long chances, and if he sees capture staring him in the face will put on speed and will get away if possible.

"One thing of importance seems to be lost sight of. Overspeeding is not necessarily reckless driving. Ordinarily when the machine is going over the speed limit it is not going so fast but that it is under perfect control. There are exceptions, of course, but I am talking of the ordinary case of overspeeding, such as often gets into the courts. But the law sets limits for the driving of machines, and the law must be enforced.

"The overspeeding trouble will undoubtedly work itself out. There should be harmonious efforts. The authorities should see the rights of the autoists and the autoists should see the rights of the authorities and public. If they work together everything will probably be straightened out much more quickly than if there are enmity and discord and an effort to push things without the proper investigation into the matter."

Club Will Not Conduct Eagle Rock Climb.

Although several papers have conspicuously heralded that the New Jersey Automobile and Motor Club would promote this year's Eagle Rock hill climbing contest on Thanksgiving Day, an official of the club stated positively to the Motor World that the club would not at this late hour promote or, in fact, have anything to do with any contest that may be held. The newspaper announcements, it appears, grow out of the efforts of W. J. Morgan, a professional promoter, who lives near the hill and holds a card of membership in the club, to secure entries for an event of the sort.

RED DEVILS NOT SO WARM

Frost Falls on their Twice-Postponed Racemeet and Despite a Ladies Race, too.

After two postponements, the lame excuse being adverse weather and poor track conditions, the race meet at St. Louis, Mo., promoted by the self-styled "Red Devil Automobile Club," was finally run off at the fair grounds track in that city, Saturday, 11th inst.

Although everywhere else in St. Louis the weather was ideal, a heavy mantle of frost settled over the track early in the meet, and before the last event was run off most of the spectators seemed to be shivering from the cold. In fact, the only interesting events were a five mile for motorcycles and an impromptu three mile event for bicycles which was gotten up after the automobile race meet to save the day.

The first event, a three mile novelty race, with four entries, was speedily dispatched with, owing to lack of starters. Then followed a five mile open for motor cycles, which brought out a field of some twenty starters. Jno. Hurck, Richard Hurck and William Chrisinger, all on 1¾ H. P. Indians, finished in a bunch in the order named, meting out a savage defeat to the rest of the contestants. The time was 7:30.

W. W. Leathers, in a White, showed the way across the tape in the five mile event for cars weighing less than 1432 lbs. W. C. Walker in a Jackson was second.

The next event was the "St. Louis Championship," at five miles. O. Parvin, in his Pope Toledo, easily captured the honors, with W. C. Walker (Jackson) and W. W. Leathers trailing him in the order named. The time was 6:30 1-5.

An owners' race and a ladies' novelty race, each at two miles, were also "contested." A special race for light delivery wagons was disposed of in the same expeditious fashion as the first event—that is to say, it was not run because of lack of entries. The summarie:

Five miles for motorcycles—John Hurck, 1¾ Indian, first; Richard Hurck, 1¾ Indian, second; William Chrisinger, 1¾ Indian, third. Time, 7:30.

Five miles, for cars weighing 1,432 pounds or under—W. W. Leathers, 15 H. P. White, first; W. C. Walker, 18 H. P. Jackson, second. Time, 7:11 1-5.

Five miles, free-for-all, for championship of St Louis—O. Parvin, 20 H. P. Pope-Toledo, first; W. C. Walker, 18 H. P. Jackson, second; W. W. Leathers, 15 H. P. White, third. Time, 6:30 1-5.

Two miles, for owners -I. E. Schuck, 18 H. P. Jackson, first; L. Pickel, 12 H. P. St. Louis, second. Time, 3:30 4-5.

Novelty, for lady drivers—Mrs. J. C. Underwood (Moline), first; Mrs. F. Starke (St. Louis), second; Mrs. W. E. Bowman (White), third. Time, 4:00.

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Morrell Gets a Mantel Ornament.

Several newspaper men and several tradesmen gathered at the Waldorf-Astoria, New York City, last Thursday night, to present Robert Lee Morrell, chairman of the racing board of the American Automobile Association with a piece of bric-a-brac, done in bronze, entitled the "Dance," and to tell him how well he managed the Vanderbilt Cup Race. Why a mantle ornament suggestive of terpsichoreism instead of motoring was selected not even the guests, who had each contributed something towards the memento, could explain.

The toastmaster or committee in charge of the affair was a foreign American citizen who, it is said, recently beat the racing board's head out of a large sum at the German national game. Whether the pinochle episode pricked his conscience sufficient to make him want to "square" himself was not stated at the banquet. After the dishes had been cleared away and were replaced by what usually follows, the guests, for diversion, took to eulogizing Morrell, who is really a good fellow, in song and speech, and one of the elect even went so far as to proclaim him the "Napoleon of Automobiling."

Wisconsin Law Gets a Set-Back.

Judge Fowler has handed down a decision in the case of the city of Ripon, Wis., vs. Dr. A. Mitchell, of that city, for an alleged violation of the ordinance regulating the speed of automobiles. The decision is the result of arguments made by attorneys for Dr. Mitchell, who was sued by Ripon for the recovery of penalty for alleged violation, that the City Council had no authority to pass such an ordinance, and that any vehicle can go at any reasonable speed upon the streets of cities.

Judge Fowler holds that the ordinance is perfectly valid; that an automobile driver must stop at a given signal from a person driving a horse or team, and that the city has a right to enact an ordinance of that kind to protect its commerce and trade. In reference to the last, the court ruled that to protect horses, farmers' and others, in the city any municipality has a right to adopt an ordinance similar to that enforced in Ripon.

Herr Conrad on Carbonic Gas.

In a recent lecture before a German technical automobile society Herr Conrad introduced the subject of carburetted hydrogen motors, illustrating by means of lantern slides a description of a five cylinder motor of his own design, in which carbonic acid gas was employed as a source of energy. The designs showed three power cylinders, one for compressing the gas and one-fifth for starting the engine. A special feature of the design lay in the fact that slower rotational speed than is common with the ordinary gasolene motor was contemplated, in conjunction with increased flywheel momentum. It was stated that by increasing the consumption a proportional increase in power would be obtainable, and that on that account the usual transmission mechanism might be done away with. Herr Conrad is working in a field which is not overcrowded with investigators.

A. A. A. Takes up Map Making.

At the November meeting of the board of directors of the American Automobile Association held in New York City last Thursday, 9th inst., it was decided to create a Routes and Maps Committee, of which Asa Goddard, Worcester Automobile Club, will be the chairman. This committee will be a subdivision of the National touring committee and a systematic plan for perfecting and revising the information concerning the main routes of automobile travel, with hotel and garage appointments, will be put into operation immediately. Goddard will personally travel over a number of the routes to better his mission.

Besides several individuals the Philadelphia Automobile Association, the Red Devil Automobile Club of St. Louis and the Indianapolis Automobile Racing Association were admitted to membership.

In reference to government aid in the building of roads the following resolution was adopted:

Resolved, That the American Automobile Association, through its State organizations, clubs, and individual members, shall begin immediately efforts in behalf of the measure known as the Brownlow-Latimer bill, which aims to create in the Department of Agriculture a bureau to be known as the Bureau of Public Roads and to provide for a system of National, State and local co-operation in the permanent improvement of the public highways. Furthermore, this Association believes that the country is now ready to demand National aid in the construction of public highways, and in consequence all road users should unite in a unanimous call for an early consummation of that which meets popular approval.

Mixing Food and Motor Cars.

Efforts are being made to bring automobiles and breakfast foods into closer relationship, and this peculiar combination will be sprung on an unsuspecting public at Jacksonville, Fla., the week of Januuary 4-18, when an automobile exhibit will be grafted onto a pure food industrial show that is due to hold the boards there. It is W. J. Morgan, just now very active in planning a profitable season for the Florida hotel proprietors, who will endeavor to mix the food and the automobiles.

Will Climb Stump Hill on Saturday.

The Rhode Island Automobile Club will hold its annual hill climbing contest Saturday of this week, 18th inst., instead of on Thanksgiving Day, as originally planned. Stump Hill, in Pawtucket, has been selected for the climb, and three classes for gasolene and one for steam cars is provided. Stump Hill is about half a mile long, with no turns, and averages a grade of 16 per cent.

May Build New Road to Niagara.

It is reported from Lockport, N. Y., that the Niagara, Lockport & Ontario Power Co. is planning to operate a line of public motor conveyances along the line of its right of way from Niagara Falls to Rochester. It is known that the company is planning to construct a road over the line for the use of its repair men and other employes, but the rumor that this will be a broad macadam road similar to the State highways, and that it will throw it open to the public and operate a line of motor cars upon it, is as yet unconfirmed, though not denied. The report states that the road may also be continued along the company's grant as far as Buffalo, and that supply stations will be established at ten-mile intervals along the way.

Chicago Club Again Chooses Farson.

At the annual meeting of the Chicago Automobile Club the regular ticket was elected without opposition. John Farson was chosen to succeed Ira M. Cobe, who has been at the head of the organization since Mr. Farson's resignation last spring. The other officers elected were: First vice-president, Allen S. Ray; second vice-president, B. H. Marshall; secretary, Sidney S. Gorham; treasurer, T. J. Hyman; directors, Ira M. Cobe, Robert Tarrant, Jr., F. C. Donald, Jerome A. Ellis, Charles E. Gregory and N. H. Van Sicklen. Secretary Gorham, in behalf of the old board of directors, presented a silver loving cup to the retiring president.

Good Roads Amendment Was Carried.

Although the actual figures have not been made known, yet it is definitely stated through the Automobile Club of America that the amendment which provides for the creation of a $50,000,000 bond issue for improving the highways of the State of New York was carried at the election on the 7th inst. As is known, under the provisions of the amendment, the State is empowered to issue $5,000,000 worth of bonds each year for ten years, the tax levy on which will fall 50 per cent on the State, 35 per cent on the county and 15 per cent on the town.

Claims Two-Miles-a-Minute Cars.

According to an attaché of the Darracq house in this country, three speed creations of 200 horsepower each, guaranteed to make two miles a minute, have been built by the Darracq company in France, and are to be brought to this country and be given a chance at the Florida carnival in January next. The cars are to be driven by four cylinder engines, and there is direct drive on all speeds, three forward and one reverse. No differential will be employed.

Edison Gets a New Car.

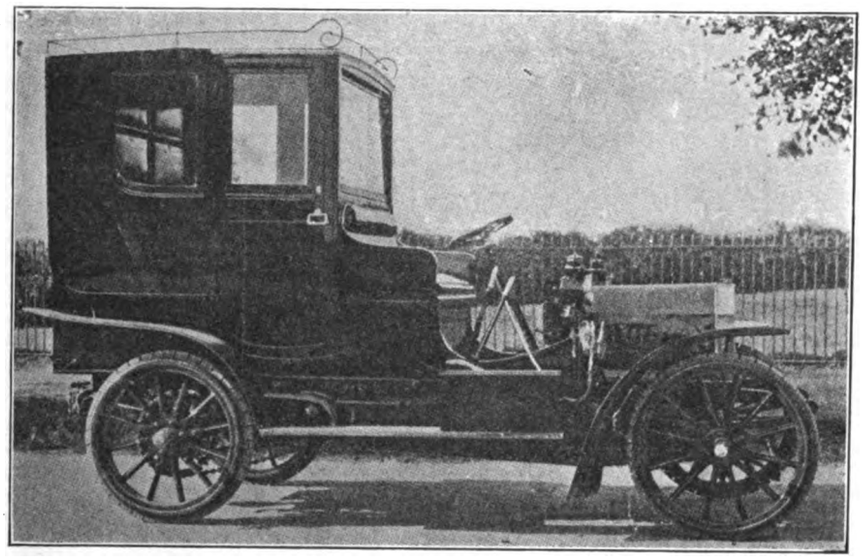
Thomas A. Edison, who does not believe in gasolene, pneumatic tires and a lot of other things, has evidently experienced a change of heart. There was delivered to him last week a 1906 Grout four cylinder touring car, which uses gasolene, and which, of course, is fitted with pneumatic tires.

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DESIGNED FOR A DRUMMER

Features of a Car Built Specially for his Use—Includes Even a Folding Desk.

Of all the possibilities which the commercial motor vehicle presents to the world, none is more attractive than that which is held out to the commercial traveller. It promises to him a ready means of getting about from place to place in a certain and economical manner, and at a rate of speed which is wholly dependent upon the highway condition of the locality in which his work is cast.



It offers to him a mode of transit which is more pleasast than that by railway, and one which has the added advantage of being timed according to the independent schedule of his own engagements; and, better still, it provides him with a means of carrying his wares and samples wherever he may elect to go, without the loss of time occasioned by the delays of express and baggage.

Of course, the pleasure car has been adapted to the needs of the travelling salesman in many instances with good results, and already several special forms of machine have been designed for his especial use. Of these, probably the most elaborate which has been constructed, unless some of the purely advertising ventures be taken into account, is that which has recently been completed by an English firm and which is here illustrated.

It is called a traveller's brougham, and is adapted to provide its user with a considerable measure of convenience, as well as to give ample storage space for his goods. There is a large locker, measuring 33 by 33 by 19 inches inside, for general storage, while inside the body and behind the passenger's seat are four lockers measuring in the aggregate, 36 by 39 by 12 inches, all of which are accessible from within. Under the driver's seat is another storage space, which is 34 by 12 by 18 inches, while under the floor is still another compartment with a carrying capacity of two cubic feet. Tools and spare parts may be carried in boxes which are placed under the footboards on either side.

The total carrying capacity of the vehicle, allowing for a reasonable stock of parts and supplies, is 27 cubic feet. The body is mounted on a 16 horsepower two-cylinder chassis, which is shod with solid tires.

The carriage work is of a high order, and the comfort of the traveller is looked after in the most approved fashion, the body being fitted with a folding writing desk and other luxuries.

Injecting Water Into Tires.

In an effort to keep them cool some motorists make it a practice to inject a small amount of water into the tires when inflating them. This practice, while effective to a certain extent, is a not unmixed benefit, for in case of a puncture the water quickly finds its way into the shoe, there to rot the fabric and cause its speedy decay. In any case, although the water cooled tire heats more slowly than one which contains air alone, once it is hot, it takes more time to cool by the same token, and, though in certain cases it may be a good plan to use a small amount of liquid, still the presence of any great amount of it tends to wear away the interior of the tube by its swirling action and shortens its life.

For Soldering Nickel.

For soldering nickel The Scientific American recommends the following compound: For fine or high grade nickel: Three parts of yellow brass, one part of sterling silver. For low grade nickel: Fifteen parts of yellow brass, five parts of sterling silver, four parts of zinc (pure or plate zinc). Melt the brass and silver with borax with a flux, and add the zinc in small pieces; stir with an iron rod, pour into a slab mould and cool slowly, when it can be rolled thin for cutting.

OILS FOR GAS ENGINES

"Fire Tests" and "Carbon Tests" Explained—Thick Oils vs. Thin Ones.

"The proper lubrication of a gas engine is a difficult problem to solve, owing to the fact that the heat generated in the cylinder is so great, that upon coming in contact with it any oil is almost instantly consumed," said E. Tomlinson, manager of the Havemeyer Oil Company, a few days since when the subject was under discussion. "This necessitates feeding it into the cylinder in a continual stream, fresh oil being needed to take the place of that which is burned up.

"The first thing, therefore, that an oil should have is an ability to stand as much heat as possible before burning up. The measure of this quality is known as its 'fire test'—for example: If an oil is said to have a fire test of 500, it means that up to temperature of 500 Fahrenheit the oil remains chemically unchanged, but that beyond and above that point it burns up. So, to begin with, a high fire test is necessary in order that the oil may remain in the cylinder as long as possible to perform its work of lubrication.

"But this quality alone is not all that goes into the making of a good gas engine oil, for in burning up, as the oil eventually does, whether its fire test be high or low, it deposits all about on the inside of the cylinder small particles of flakes of carbon. This produces the greatest trouble that an automobilist has to contend with, for the spark plugs or igniter points quickly become incrusted with this deposit to such an extent that the electrical contact is interfered with and the spark which gives the explosion is no longer made.

"Different kinds of oil contain greater or less percentages of carbon, so that some oils will deposit upon being burned less carbon than others, and the whole proposition is finally narrowed down to a point where it is simply a question of the selection of an oil which shall contain within itself two properties, (1) a high fire test, in order that the maximum amount of lubrication may be given, and (2) a low carbon test, in order that when consumed a minimum deposit of carbon may be left.

"An oil which can combine to the greatest extent the extremes of these two characteristics will be the best oil to use. Both properties mentioned—the fire test and carbon test—are ascertainable by the employment of physical tests, and it is perfectly possible to determine with mathematical certainty which oil among a given number is more suitable for use in the cylinder of an automobile and will give it the most efficient lubrication.

"The viscosity is also a factor. The viscosity of an oil is the measure of its 'body' or fluidity. It is ascertained by filling a small vessel with a certain quantity and allowing the oil to run out of a small hole at the bottom, the number of seconds required for this

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operation to take place is the viscosity which the oil is said to have.

"A very common mistake is to select an oil because it appears to be thick and heavy. The thickness or viscosity that an oil has when seen at a normal temperature is very different from the body it will have when subjected to the intense heat that it comes in contact within the cylinder. Ordinarily speaking, the thinner an oil is, provided it has the proper fire test, the better it will be for use on an automobile, for it will reach and lubricate more readily the crank bearings and crank pin bearings than the heavier oil."

What May Cause Water Troubles

Not infrequently the cause of trouble with the water circulation may be traceable to the rubber connections, which are designed to provide the requisite amount of yieldability to the system. In some cases hose is used which is too small for the purpose, the result being that when it is put in place, the inner lining is "skinned" off, and turns back over the opening in the pipes, thus partially clogging them. In other cases, where hose that is too small has been used the interior becomes soft through the actiton of the water or as a result of the use of some antifreezing mixture, with the result that under certain conditions, as for instance, when a suction pump is used, it closes and blocks the passage of the water.

Uses a Trough for Lubrication.

A decidedly novel wrinkle in the matter of cylinder lubrication has been adopted by a well known foreign manufacturer on his 1906 cars, which insures a constant and plentiful supply of oil to the most seriously taxed surfaces in the entire machine. A little trough is cast in the engine base at the foot of each cylinder, so placed that the piston dips into it at each down stroke. The troughs are filled automatically, and the overflow is filtered before being returned to the crank case for further use.

Here's Another Oil Test.

A "simple and practical method of testing lubricating oils," for use in a gasoline engine, is this one that comes from abroad: Heat a pane of glass to various temperatures, holding it an angle of 45 degrees with the horizontal, and allow samples of the different oils to be tested to run over it. That which runs farthest without evaporating under the greatest heat is the most suitable.

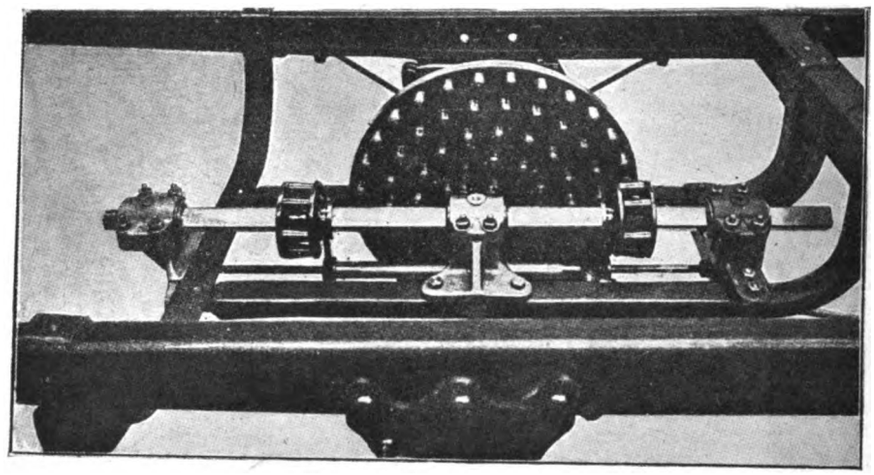
Locating the Leaks.

Leakages in compression are best located by mixing up a heavy lather with soap and water and applying it around all doubtful points with a fine brush. Any faulty joints will then be shown at once by the fine bubbles which are formed at the point of leakage. Failing the soap and water, a less delicate test may be made in a similar manner with heavy oil.

PIN AND LANTERN GEARING

Novel Manner in Which the Combination Does Duty for Automobile Transmission.

In the inventor's quest for a form of variable speed transmission which shall satisfy the somewhat varied and complex requirements of that mechanism, many different results have been produced which, as time goes on, have been seen to gravitate toward one of two systems for the most part. That is to say, leaving out of the question the forms of purely frictional gear whichever have been in the background, practically all the transmissions which have been produced readily fall under the classification of the planetary or sliding gears. A totally new departure which has recently come to light in Great Britain is that of a mechanism which uses a combination of pin and lantern gearing.



PIN AND LANTERN GEARING.

Essentially this new form of transmission consists of a shaft which is placed lengthwise of the car and which carries two driving gears of the lantern type. These consist of a cage comprised of a pair of discs connected by a series of pins circumferentially arranged, upon which are mounted a series of rollers. These gears are slidably mounted upon the squared driving shaft, and their position is controlled from the driver's seat. Mounted on a shaft at right angles to this, is a disc upon the face of which four sets of pins are arranged in a series of concentric circles. The disc, which also is slidably mounted on its shaft, may be moved toward or away from the driving shaft, at the will of the operator.

The final drive is taken from the transverse shaft to the rear axle by means of a chain in the usual manner, while the connection with the engine is made by a friction clutch of the ordinary type. The mechanism which serves to withdraw the clutch, also actuates the driven disc, drawing it out of action with the pinions.

The action of the device is as follows: By pressing down the clutch pedal the operator withdraws the clutch, at the same time drawing back the disc and permitting the free passage of the pinions along the driving shaft. The shifting lever is then moved until it registers with a position corresponding to one of the speeds. The pedal is then released and the disc is automatically returned to its normal position, which is just far enough from the driving shaft so that the pins upon the disc will bear upon the rollers on the driving pinions. At the same time, or an instant later, the clutch takes hold, and the car starts. In a similar manner the changes from one speed to another are made, and the reverse obtained, for the latter purpose the second of the two driving pinions being called into requisition.

The clutch pedal is made up of two plates, one of which is nearer the bearing point than the other, so that on pressing upon it the leverage obtained is not sufficient to withdraw the disc, though it is ample to free the clutch. In this way the car may be handled on the clutch in the ordinary manner, without taking the gears out of mesh. When this becomes necessary, however, the upper portion of the pedal is depressed, and the complete motion is obtained.

Without going into complete details of the mechanism, it is evident that it is absolutely interlocking, and that no amount of mischance can make it possible to strip the gears through partial meshing, since from the method of arrangement it is impossible to have more than one gear set in mesh at one time, and since it is impossible to bring the disc into its running position unless the teeth or pins mesh in the proper way.

Whatever may be the practical efficiency of the system, and its amount of durability in use, the fact remains that the frictional loss is the same for all drives, and that the quantity of mechanism is considerably less than that in use in many forms of gear which already have been accepted by the public and put to everyday usage.

The Rainier Co. is claiming a unique record—that of having sold seven Rainier cars to seven different members of one family, the McKenzie family, of New York.

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The New Model 1906

Rainier

30-35 H. P.

What is the automobile buyer going to do when he is strenuosly told that each and every one of the 1906 cars is THE BEST CAR IN THE WORLD?

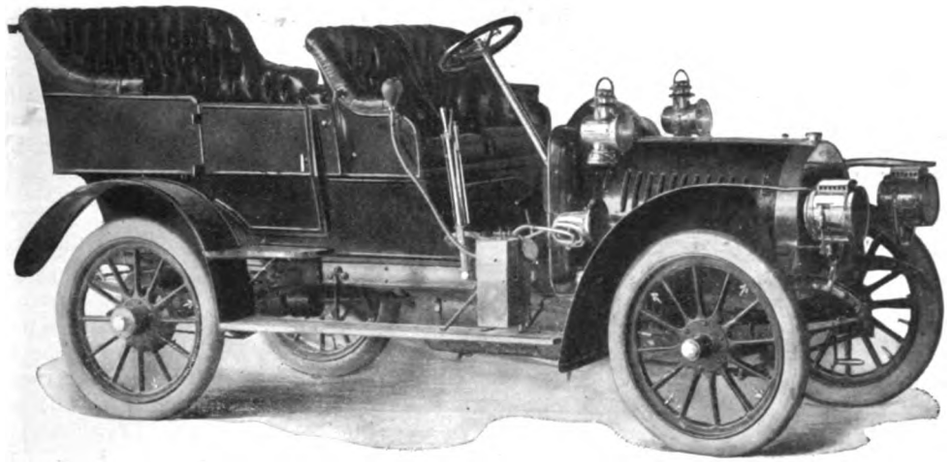
He is going to do a little investigating.

He is not going to be attracted nor distracted by the whirlwind of words with which one car after another comes before the public on paper.

When he gets down to business, he will find the RAINIER in the front rank of cars that have won renown and made fast friends by actual achievement. He will find that in every inch of metal and wood, in every working part, in every line, the Rainier as it will take the road in 1906 is the very embodiment of strength, compactness, lightness and beauty —now more than ever before "The Pullman of Automobiles."

We want good Rainier agents in all unassigned territory. We can give them a car to sell that WILL sell, and that will make a new salesman of every purchaser. We stand back of the Rainier with the broadest and most liberal guarantee ever given.

Correspondence invited.



ENGINE.	30-35 H. P., 4 cylinders water cooled.	**VALVES.**	Mechanically operated, inlet and exhaust interchangeable.
IGNITION.	Sims-Bosch Magneto—make and break spark.	**CARBURETTER.**	Float feed, requiring no adjustment.
TRANSMISSION.	Sliding train. 3 speeds forward and one reverse.	**BRAKES.**	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
REAR AXLE.	Bevel gear drive, clutch driven hub. Ball bearings.		
FRONT AXLE.	I Beam section. Ball bearings.		
FRAME.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.	**BODY.**	Full aluminum, double side entrance.
WHEEL BASE.	104 inches.	**EQUIPMENT.**	Two head lights, 2 side lights, 1 rear light, 1 horn.
WHEELS.	Imperial whalebone, grade A 2nd growth hickory.		
TIRES.	Continental 34 x 4.		

Price, $4,000.

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinder—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body

Price, $3,500.

BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for November and December delivery.

THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Boston Agents: MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.

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When the Injured File their Bills.

"Whenever an automobile gets mixed up in an accident of any kind there is bound to be a claim for damages," said a man who has had some experience in settling matters of this kind. "Usually the claims are for many times the amount that could justly be asked, and frequently there is no just basis for a claim at all, but the prevalent impression seems to be that anybody who owns an automobile is a millionaire, and should, therefore, be made to suffer.

"A woman came into my office a short time ago and wanted me to collect for her a claim of $60 for damages to her carriage, which, she said, had been smashed in an automobile accident the day before. I learned from her that the owner of the automobile was also a client of mine. On inquiry I found that his automobile had been standing still beside the road when her carriage ran into it. He refused to pay her anything.

"Three weeks later she began suit for $5,000 damages, alleging in her complaint that she had been so seriously injured in the accident that she had been confined to her bed for two weeks, and this in spite of the fact that she had been able to visit my office the day after the affair.

"In refreshing contrast was the action of a gentleman who, with his wife, got in the way of an automobile belonging to a client of mine. Both were knocked down and slightly hurt, although the chauffeur did all in his power to avert a collision. The next morning my client received a letter from the gentleman stating that the fault was all his and that the chauffeur was to be complimented on his success in averting what might have been a serious catastrophe."

Potter Learns Roads are not Free.

Dr. Carlton Potter, of No. 82 Commonwealth Avenue, Boston, finds himself in a somewhat equivocal position in that he is the owner of an automobile which he cannot use although it is in good order and the roads of America are supposed to be free. The State. Highway Commission recently revoked his certificate of registration, and also nullified that of his chauffeur, who has been convicted of fast driving four several times during the past season. The car cannot legally be used again during the remainder of 1905, and the chauffeur's license cannot be renewed before 1906.

Meeting the Shotgun Campaign.

Shotgun legislation in Missouri is going to be given a heavy recoil, and the instrument is the St. Louis Automobile Club. The organization has employed some of the best legal talent in the State to represent it in its fight for just legislation.

"If you run your automobile more than nine miles an hour in St. Louis County," the opening paragraph of the circular sent to every automobile owner in the State reads, "you are liable to be held up by rather suspicious looking individuals, with long revolvers pointed in your face. You are then arrested and released on $200 bond to appear before a justice." Protest is made over the fact that many counties ask and require licenses for running automobiles through them, and the club will in particular test this law, as well as the efforts on the parts of the authorities to keep the speed down to nine miles an hour. As matters now are, it costs nearly $60 in licenses alone to pass through the State from St. Louis to Kansas City.

Vaseline as a Dirt Remover.

Common everyday vaseline is the best protection against grease and dirt, according to a motorist who says he has tried it. A little rubbed into the hands each morning and noon is a hundredfold better than any dirt remover made, and a 10-cent bottle will last two months. The vaseline works into the pores of the skin, forming a coating which is impregnable to any dirt. This is washed off at night, using soft water and a good soap lather. After a thick lather is obtained, dip the hands in cornmeal and proceed, using soap alone, rubbing the meal into the crevices of the hands and fingers. For the callous places on the forefinger a cake of scouring soap is used, rubbing on lightly, if necessary. Instead of "rasping" the dirt off, as would be supposed, this process readily dissolves it.

Big Bid for Testimonials.

A distinctly novel method of advertisement has been adopted by a firm of foreign manufacturers by way of introducing their new model car. All owners of their last year's type are invited to send in full particulars of the performance of the machine during the time it has been in their possession, and the company, taking account of all of these, agrees to furnish to him who has achieved the most satisfactory results all things considered, one of their latest cars in exchange for the old one, absolutely without cost.

To Curb the Chauffeur.

Cables from Paris state that to reduce the number of accidents the French interdepartmental commission will recommend that an age limit for chauffeurs be set, that a medical certificate be required of all applicants and that all previous convictions be reported to the Minister of the Interior. In addition it is proposed that a speed limit be set for localities within village limits, and that the names of the maker and owner of each car be placed on a plate which will be decipherable at a distance.

Walter Gets His Diploma!

"Walter Wright, one of our young society men, has gone to Philadelphia to study automobiling.—From Toms River (N. J.) Democrat, October 19, 1905.

"Walter Wright, who returned from Philadelphia with a diploma from an automobile training station, left on Wednesday morning for Lakewood, where he is employed.—From Toms River (N. J.) Democrat, November 2, 1905.

Hillsboro Sees a Skydoodle Wagon.

Hillsboro, Ill., has been visited by an automobile, an unprecedented occurrence, and the visit naturally excited the editor of the solitary paper in the town. He thus gives vent to his feelings:

"A big touring automobile passed through Hillsboro last Monday and created almost as much excitement as the split-log drag did in Greenville last spring. It was the biggest skydoodle wagon ever seen here. It had big brass eyes in front and behind, and it bristled all over with levers and valves and faucets and set screws and knobs and handles. The car was covered with canvas, and evidently cost more than a farm in the corn belt. When in front of Latham's hardware store it took a severe paroxyism and phthisic and wheezed and coughed like a horse with the heaves. The chauffeur (pronounced 'shofur') got out and took off its dewlap and scraped its innards with an ivory handled scalpel. Then he picked a cinder out of its left eye with a ten-dollar toothbrush and gave it a drink of absinthe. It coughed up a quart or two of gasolene and was all right. The only occupants of the devil wagon were the 'shofur' and two duchesses supposed to be from Sterling or Chicago or some other place up North where millionaires are as thick as chiggers at a Free Methodist camp meeting. They were headed for St. Elmo, in Fayette County, and as they flew down the Andalia road the women along the route hid in the smokehouses and the men ran yelping into the brush."

Here's the Negro's Non-stopper.

Not perpetual motion this time, but a "four-day non-stopper," has appeared in Missouri. A St. Louis black man—name not given—has invented an automobile that promises to fulfil the dream of rural mail carriers, and also a few others who aspire to possess but lack the wherewithal. The first machine sold for $250, and as soon as the son of Ham rounds up enough capital cars will be placed on the market for $150 or less. According to a home paper, "this wonderful machine will be able to maintain a speed of thirty-five miles an hour for four days without stopping." Whether it will go after that is not stated.

Wilbraham's Limit is Upheld.

Notwithstanding the appeal filed with the Highway Commissioners of Massachusetts against the action of the Selectmen of Wilbraham in passing an ordinance limiting the speed of automobiles to eight miles an hour, that august body has approved the restriction, and signs will be posted next week. Eight miles an hour is the limit allowed through all villages in that town.

Teaching it in School.

A series of lectures on motor car engineering have been instituted in the municipal training school of the city of Liverpool, Eng., which will be delivered by a local member of the trade. Seventy students appeared on the occasion of the first installment of the series.

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CHAS. H. ROCKWELL, Traffic Man.

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The Week's Patents.

803,116. Lathe Attachment for Turning Crank-Shafts. Dean C. Lewis, Ardmore, Penn., assignor to The Autocar Company, Ardmore, Penn., a Corporation of Pennsylvania. Filed December 8, 1904. Serial No. 235,995.

Claim.—1. In a lathe for turning crank-shafts, in combination, a head-spindle, a face-plate, secured to the head-spindle, having an orifice, to receive the shaft, eccentric to the lathe-axis, a tail-spindle, a bushing having a central orifice adapted to receive the shaft and orificed portions, in one of which at an angle thereto and to each other the tail-spindle is adapted to rest, a rotatably-mounted plate intermediate of the head and tail spindles, said plate, having an elongated orifice, extending from the centre thereof, said plate carrying clamping devices.

803,121. Rear Axle for Automobiles. Frederick C. Miller, Cincinnati, Ohio. Filed April 13, 1905. Serial No. 255,277.

Claim.—1. A rear axle for automobiles, consisting of a tube, the intermediate walls of which are swaged apart from the centre of the tube forming a housing, a wheel-shaft projected through the tube into the housing, and a transmission mechanism for the shaft within the housing, substantially as described.

803,275. Rotary Engine. John A. Eaton, Chicago, Ill., assignor of one-half to Charles M. Seckner, Chicago, Ill. Filed December 4, 1903. Serial No. 183,702.

Claim.—1. In a device of the class described an annular steam-chamber, a piston therein, a shaft, means operatively connecting said piston with said shaft, a cut-off valve,, a cam on said shaft and toggle means connected with said valve and operated by said cam adapted to operate the cut-off valve.

803,289. Throttle and Regulating Device for Explosive-Motor Vehicles. Thomas B. Jeffery, Kenosha, Wis. Filed June 27, 1904. Serial No. 214,436.

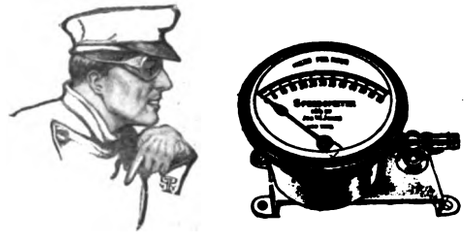
Claim.—1. In an explosive-motor vehicle in combination with the gas-inlet valve and means for opening and closing it, the gas-inlet pipe having an air-inlet port intermediate the gas-inlet valve and the motor; a valve for controlling such air-inlet port; a spring which tends to close such valve; connections for opening it connected with the means for operating the gas-inlet valve adapted to open said air-inlet as the gas-inlet closes, and a trip for disengaging said air-inlet-valve connection to permit the latter to be closed by the spring without reversing the gas-inlet-valve movement.

803,310. Nut-Lock. Jacob T. Smith, Dublin, Va. Filed May 20, 1905. Serial No. 261,318.

Claim.—1. In a nut-lock, a bolt having its threaded end provided with a channel or groove, and a nut provided at one corner with a lug or teat, in combination with a locking member looped around the teat and having a portion disposed in the channel and a terminal seated in the valley of the bolt-thread.

803,324. Rotary Engine. Peter Bartoletti, Brownsville, Penn. Filed February 4, 1905. Serial No. 244,113.

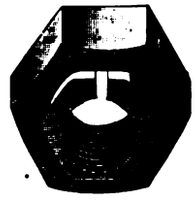
Claim.—1. A rotary engine comprising a cylinder having an abutment formed with a passage extending from end to end of the abutment, a piston mounted to turn concentrically in the said cylinder and provided with spaced rims forming with the cylinder-heads a working chamber between which rims extends the said abutment, the piston-web portion extending between the rims passing through the said abutment-passage, the said piston-web portion having spaced openings, wings in the said opening, mounted to turn in bearings in the piston-rims, shoes secured on the outer pivots of the wings, and



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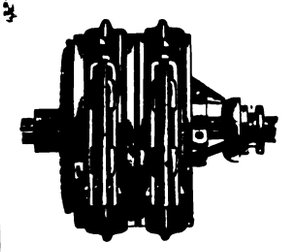


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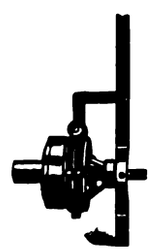
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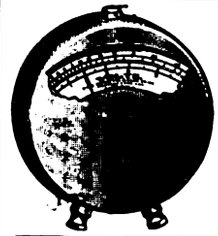
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oppositely-disposed cams on the heads of the cylinder, engaged by the said shoes, for turning the wings.

803,326. Vehicle-Wheel. James M. Carpenter, Millersburg, Ohio. Filed April 14, 1905. Serial No. 255,491.

Claim.—1. A vehicle-wheel tire comprising a plurality of short segmental pivotally-connected links, lateral wings on the links or sections, teeth on the links and extended transversely thereof, arms extended inward from certain of said wings, spoke-engaging clevises adapted for removable engagement with said arms, the said clevises being extended at an acute angle to connection with the spokes, and metal plates on the spokes with which the clevises engage.

803,339. Internal-Combustion-Engine Regulator. Albert N. Hatherell, Appleton, Wis. Filed June 21, 1904. Serial No. 213,444.

Claim.—1. An internal-combustion-engine regulator, comprising the combination with an eletrical igniting system, of means for establishing a short circuit therein, and including a centrifugally-operated member connected to turn in synchronism with the engine and adapted to be thrown into action by the centrifugal force.

803,345. Pneumatic-Tired Wheel. Thomas B. Jeffery, Kenosha, Wis. Filed November 21, 1904. Serial No. 233,697.

Claim.—1. In a vehicle-wheel, in combination with the felly having a peripheral rim overhanging at the sides, a flexible tire-casing having beads or enlargements at its lateral edges, such beads or enlargements being engaged under or within the overhanging margins of the rim, and guards adjustably secured to the felly within the circle of such beaded edges adapted to be adjusted bodily radially with respect to the wheel for holding the edges outward against the overhanging margins of the rim.

803,354. Means for Relieving Cooling-Jackets of Steam and Indicating the Circulation of Water Therethrough. John E. Miller, Belvidere, Ill., assignor to National Sewing Machine Company, Belvidere, Ill., a Corporation of Illinois. Filed October 6, 1902. Serial No. 126,120.

Claim.—1. In an apparatus for the purpose described, the combination of a water-cooling jacket, a water-circulating means comprising a passage, a steam-relief leading from said jacket to a point above the general level of said passage, and a transparent connection between the upper end of said relief and said passage whereby the circulation of the fluid through said relief may be observed, substantially as set forth.

803,361. Traction-Engine. Robert Reed, Logansport, Ind. Filed October 28, 1904. Serial No. 230,329.

Claim.—1. In a traction-engine, the combination of a motor, a motor-shaft, a main shaft in a plurality of parts, means for transmitting power from the motor-shaft to one of said parts, means for transmitting power from each of the other parts of the main shaft for propelling the vehicle, and means for uniting the first-named part of the main shaft with any of the other parts, or with all of them at the same time.

803,367. Cushion-Tire. Carl G. Shaw and Webb J. Shaw, Los Angeles, Cal. Filed July 7, 1905. Serial No. 268,676.

Claim.—1. A cushion-tire comprising numerous radially-disposed rigid members embedded therein at the tread portion thereof, and reticulated material connecting the members and embedded within the tire circumferentially thereof.

803,406. Rotary Engine. Thomas Davis, New Haven, Conn. Filed May 18, 1905. Serial No. 261,069.

Claim.—A rotary engine comprising a cylinder, a recess formed therein, the wall of said recess forming an arc of a circle of smaller diameter than the diameter of the cylinder, a piston eccentrically mounted in said cylinder and of a diameter to closely fit the surface of said recess, said piston formed with grooves in its face, longitudinally-arranged rods mounted in said piston, blades connected with said rods and extending over said grooves and so as to cover the same, said rods being free to turn whereby said blades may be moved away from the face of said piston, spring-plungers mounted tangentially in said piston and bearing against the inner face of said blades, an inlet-port at the top of said cylinder and in position to open between one of the blades and the adjacent face of the piston, and an exhaust-port at the bottom of said cylinder and opened by the passage of said blades in the rotation of the piston, substantially as described.

803,468. Fastener for Carriage-Curtains, Etc. Fred S. Carr, Malden, Mass. Filed January 14, 1905. Serial No. 240,997.

Claim.—1. A fastener comprising a socket member having a yielding jaw, and a stud member having an abrupt shoulder adapted to positively engage said jaw to prevent separation of the members while the engaging faces of the shoulder and jaw are in parallel planes and the stud member also having an additional part to act upon said jaw and to disengage said shoulder and jaw when said faces are moved out of paralell planes.

803,500. Vehicle-Wheel. Winfield J. Mitchell and James R. Mitchell, Lynn, Mass. Filed October 3, 1904. Serial No. 226,900.

Claim.—1. A vehicle-wheel comprising a rigid rim, a pneumatic cushion bearing on said rim, annular plates attached rigidly to and projecting outwardly from the rim at opposite sides of the cushion, said plates having inwardly-projecting tire-seats surrounding the cushion and each having two outwardly-projecting ears, and an elastic tire having base portions bearing on the said seats between said ears and having a leg projecting inwardly between the seats and supported by the pneumatic cushion.

803,501. Vehicle-Wheel. Winfield J. Mitchell and James R. Mitchell, Lynn, Mass. Filed January 11, 1905, Serial No. 240,526.

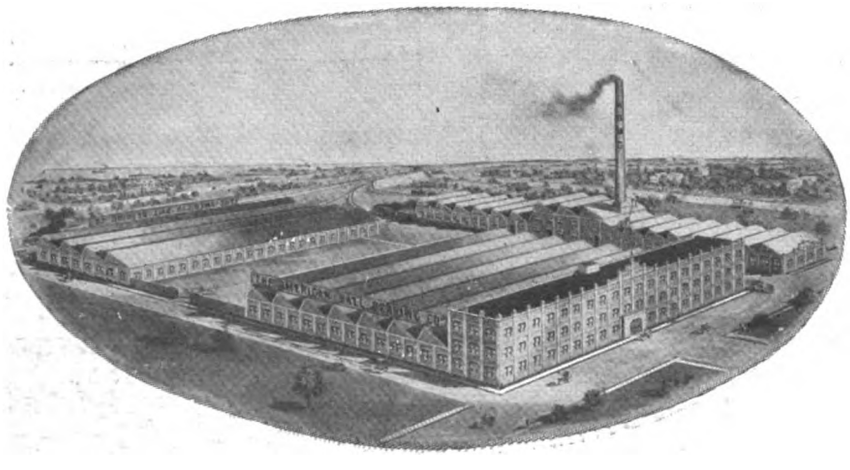
Claim.—1. A vehicle wheel comprising a chambered rim provided with an inner seat and two outer spaced-apart seats, a pneumatic cushion bearing on said inner seat, an elastic tire having base portions bearing on said outer seats, a leg formed of a plurality of elongated segmental members of elastic material seated in said tire and bearing upon said cushion, said members being interposed between said outer seats and having their abutting ends provided with coinciding recesses, and securing devices engaging the recessed portions of said members, whereby the latter are prevented from creeping.

803,510. Pneumatic Tire. William A. Sankey, Sutton, England, assignor to Frank Reddaway, Pendleton, Manchester, England. Filed January 24, 1905. Serial No. 242,545.

Claim.—In combination a vehicle-wheel having its felly provided with lateral recesses, a channelled rim fitting on said felly and having lugs engaging in said recesses, said channelled rim being formed of a stationary part, and a removable part, bolts passing through the lugs of the removable and stationary parts to hold said parts together, a cover having lining rendered impervious to air under pressure having beaded edges and a wire embedded in each of said edges, an endless separate ring to encircle the bed of the rim and wedge the edges of the cover against the sides or edges of the rim, a valve for inflating the cover with means for mounting the valve fluid-tight to prevent the escape of air, substantially as described.

803,522. Change-Speed Gearing. Joseph P. Barnes, Rockford, Ill. Filed February 21, 1905. Serial No. 246,792.

Claim.—1. In a change-speed gearing, the combination of a main frame, a spindle, two bevelled toothed wheels located concentric with the spindle, and facing in the same direction and each provided with a clutch-face, a sliding clutch-section located on the spindle between the bevelled toothed wheels, a toothed pinion for each bevelled toothed wheel and means for revolving the pinions in opposite directions.



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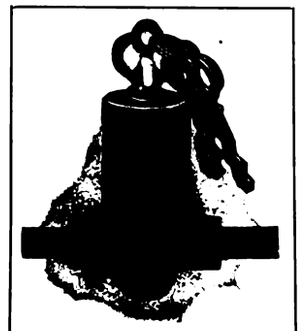
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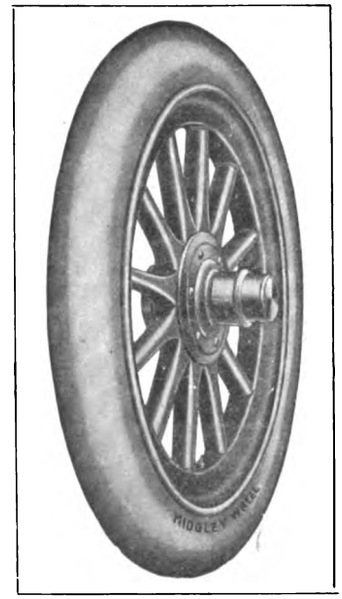
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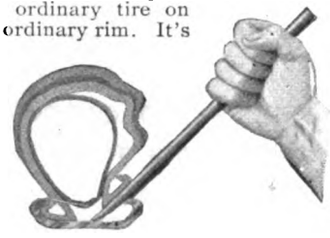
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DID you ever try to force an inch tube over an inch and a quarter bar—or to put a pair of No. 7 gloves on a No. 8 hand?

You wouldn't be so foolish, would you?

But that's to all intents and purposes what the Automobile Man has to do every time he puts an ordinary tire on an ordinary rim. It's

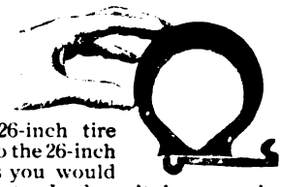


about as hard work as breaking into a bank, and he goes at it the same way, with a "jimmy" and other burglar's tools. Because a 26-inch wheel (for example) is really *27 inches* in diameter, when you consider the flange. So a 26-inch tire has to be forced over a 27-inch rim every time you put on a tire, or take it off.

It's a heart breaking job, even for a strong man, and it takes from half an hour to an hour each time you do it.

And after you have removed such a tire a few times, the base of the tire becomes stretched, and the fabric (used to strengthen it) becomes broken in places, until this tie becomes 27 inches in diameter instead of 26, a full inch larger that the face of your wheel. So you have to bolt it down, or it will creep, tear the valve out and cause all kinds of trouble. And even then you have to keep it pumped up continually as hard as it will stand.

Now the Goodyear Detachable Auto Tire can't creep, because, in the first place, it doesn't have to be *forced* on (if you use the Goodyear Universal Rim). The 26-inch tire slides right on to the 26-inch rim as easily as you would put on your hat. It doesn't have to be pried over a 27-inch flange.



And next, at the first stroke of the pump, the tire begins to grip the rim like grim death, because there is a mesh or tape of piano wire vulcanized clear around the tire on each side of the base.

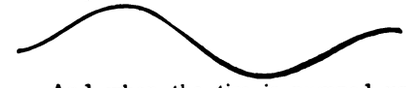
When the tire is flat these wires are like this:



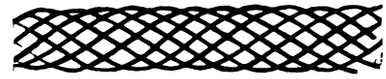
And each single wire like this:



The instant you begin to pump, this wire begins to shorten like this:



And when the tire is pumped up hard, the wire mesh is like this:



If you put a Goodyear Auto Tire on a wood rim, and pump it up hard, the pressure will be so great that the base will squeeze a ridge in the wood.

So the Goodyear Auto Tire need be only *half* inflated, and it will still have a firmer grip on the rim than it is possible to secure with plates and bolts. This, however, is only *just one* of the good points of this trouble-saving tire.

You will find other points in our "Good News Book." It is vitally interesting to every manufacturer, dealer or user, for it shows the way to perfect relief from Tire Troubles. It's FREE. Ask for it.

THE GOODYEAR TIRE & RUBBER COMPANY - Grove Street, AKRON, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St.; and Detroit, 242 Jefferson St.

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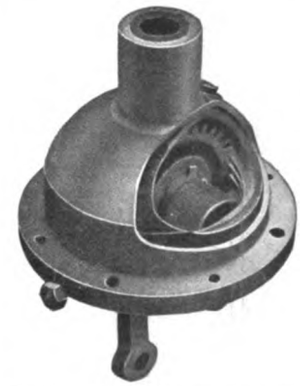


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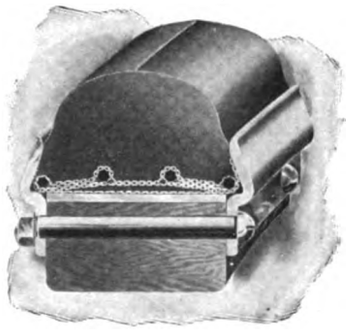
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Fire Engines.

TIRE ECONOMY

COST OF MAINTENANCE is main factor for consideration in selecting tire equipment.

MAKE CAREFUL COMPARISONS.
Don't be prejudiced by poor results obtained from cheap tires.

STOP EXPERIMENTING and end dissatisfaction by adopting a tire that has demonstrated its worth by years of use under all conditions, and to thousands of satisfied users

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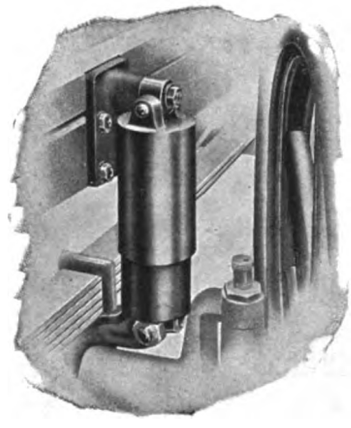
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(PATENT ALLOWED)



ON GOOD ROADS—They Allow you to use and enjoy the full elasticity of EASY FLEXIBLE SPRINGS, OBSERVE we say "full elasticity."

ON BAD, DANGEROUS ROADS—They control the too violent spring play BOTH UP AND DOWN, OBSERVE we say "both up and down."

THEY TRANSFER THE LOAD and strain from the springs to the axles.

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THEY LESSEN THE WEAR and tear on tires.

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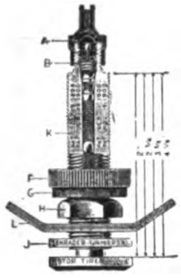
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SIMPLE AND ABSOLUTELY AIR TIGHT.

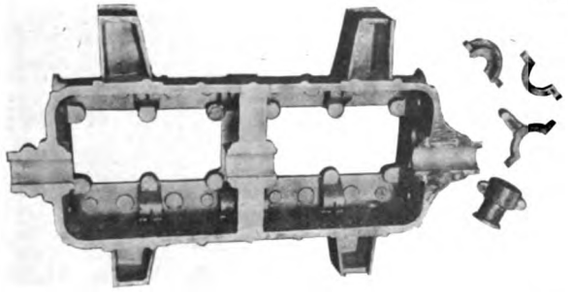
MOTOR TIRE VALVES, as shown in cut, are made in four lengths as shown. Cut is exactly half size of the 2 in. valve.

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Without flourishes or fads Acme Motor Cars are the most widely developed and thoroughly practical made.

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AUTOMOBILES,
Corner Fourth and Gay Streets,
Columbus, Ohio, September 5, 1905.

THE STEEL BALL CO., Chicago, Ill.

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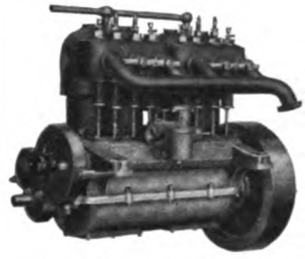
Yours truly,
THE OSCAR LEAR AUTOMOBILE CO.

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means all that is best when applied to motors, clutches and transmissions, but only when made by us.

Avoid imitations. Our 1906 line covers a variety of sizes for all kinds of cars. Ask for catalogue.

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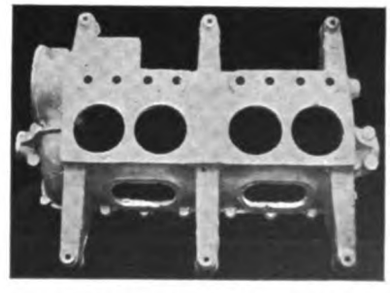
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THEY ARE ALWAYS RELIABLE.

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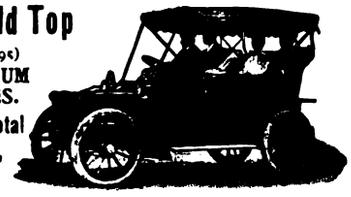
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PRICE, $1500.

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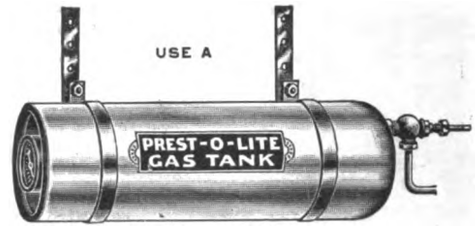
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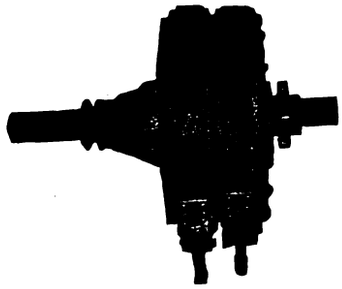
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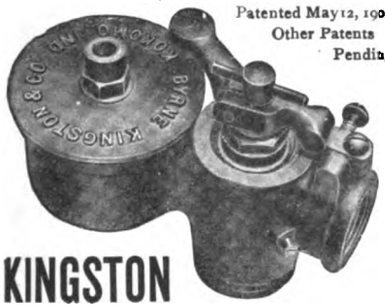
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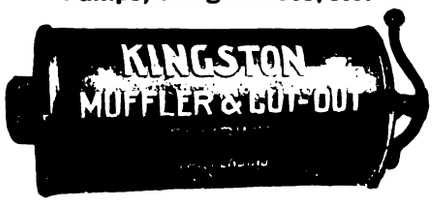
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A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and, growing bolder, bursts forth in one pure sheen of grandeur.

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We make parts from your own design from either brass or aluminum

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OUR CHAINS OUTWEAR ALL OTHERS

Replace your worn out chain with a **"DIAMOND,"** which fits any standard sprocket.

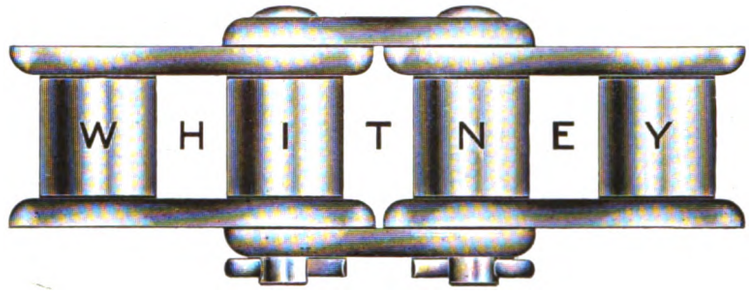
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THE
WITHERBEE BATTERY
Solves the Ignition Problem

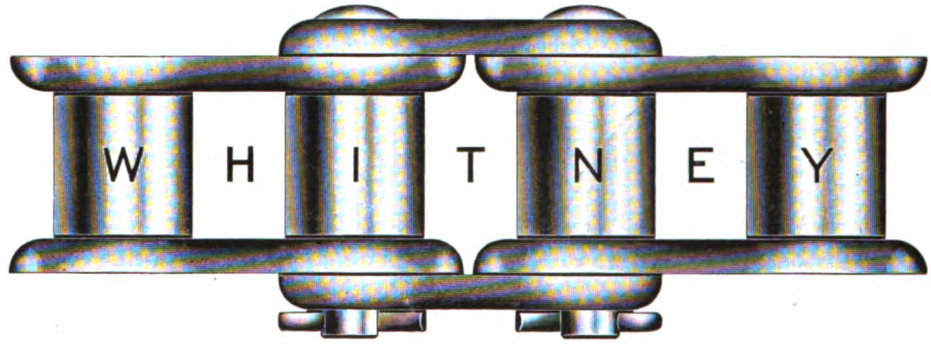
WITHERBEE IGNITION CO.,
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Investigate " Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the Leading American Automobile Builders and have been recognized by other chain makers at Home and Abroad. If they are made universal six sizes of chain can eventually take the place of over thirty sizes used in the past.



1906 MODEL "WHITNEY" DETACHABLE CHAINS—Patented.



We urgently request manufacturers to be careful in machining sprockets, to select chains of a suitable size and to provide sufficient space for chain clearance. Thousands of chains used in the past have been damaged by interference.

THE WHITNEY MFG. CO., Hartford, Conn.

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Do you know J. H. McDuffee of the McDuffee Automobile Co.?

We have Positive Proof from Mr. McDuffee that Morgan & Wright Tires are Good Tires

Under date of August 31st Mr. McDuffee wrote us as follows:

"We take pleasure in advising you that we have had unlimited success with both types of tires manufactured by you during the season of 1905.

"We have used in the neighborhood of thirty or thirty-five sets on Stoddard-Dayton cars, and think our customers, one and all, have been thoroughly satisfied, both with the tires and the treatment you have given them.

"We write this simply to advise you that we are very much pleased with the service your tires have given us."

You get the kind of service you are entitled to get when you use Morgan & Wright Tires

MORGAN & WRIGHT, Chicago.

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POPE Waverley ELECTRICS

PROFIT TO THE DEALER.

The sales of **Pope Waverly Electrics** last year increased 60 per cent. over the year before; and the past three months have increased 60 per cent. again over that. We are not the only ones who have increased sales, and we are glad, because it shows that the **Electric** is being appreciated by the public and by **some *agents*.** Are you among those agents who sell gasolene cars only? If so, you are neglecting the most profitable part of your business. Many of our agents have told us that, had it not been for the **Electric** part of their business this year, they would have lost money. **The Electric is an all-the-year-round carriage.** Its sales are almost as great in the fall and winter, as in the spring and summer.

Are you neglecting a chance to make money at this season of the year? What you can make now is all velvet.

POPE MOTOR CAR COMPANY, Indianapolis, Indiana.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

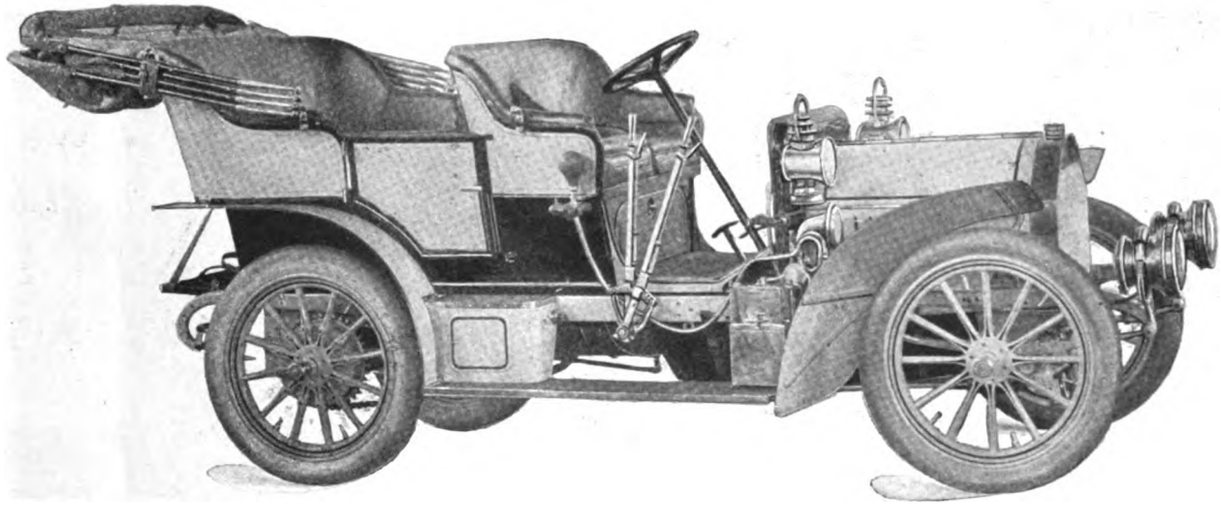
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EASILY THE BEST BUILT CAR IN AMERICA.

We announce two new styles for 1906, a powerful four-cylinder touring car, price $3,000, and a larger car at $5,000, both with complete touring equipment. These models are almost identical in design, contain the same carefully selected material, and are constructed with equal care throughout—the result of years of careful and consistent manufacture of the standard type of four-cylinder touring car.

Locomobiles are fully equal in mechanical details and running qualities to the best imported cars but are especially designed for American Roads.



SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; fitted with top irons; color and striping optional; top and luggage carrier extra.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
UNIVERSAL JOINT, double universal joint between clutch and transmission.
RUNNING BRAKE, double acting type, large and powerful, metal to metal surfaces.
EMERGENCY BRAKES, internal expansion type, large and powerful, metal to metal surfaces.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.
WEIGHT, about 2,000 pounds.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; fitted with top irons; color and striping optional; top and luggage carrier extra.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
UNIVERSAL JOINT, double universal joint between clutch and transmission.
RUNNING BRAKE, double acting type, large and powerful, metal to metal surfaces.
EMERGENCY BRAKES, internal expansion type, large and powerful, metal to metal surfaces.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
TIRES, 34 inches x 4½ inches.
WHEEL BASE, 106 inches.
WEIGHT, about 2,900 pounds.

The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 249 N. Broad St.

Member Association of Licensed Automobile Manufacturers

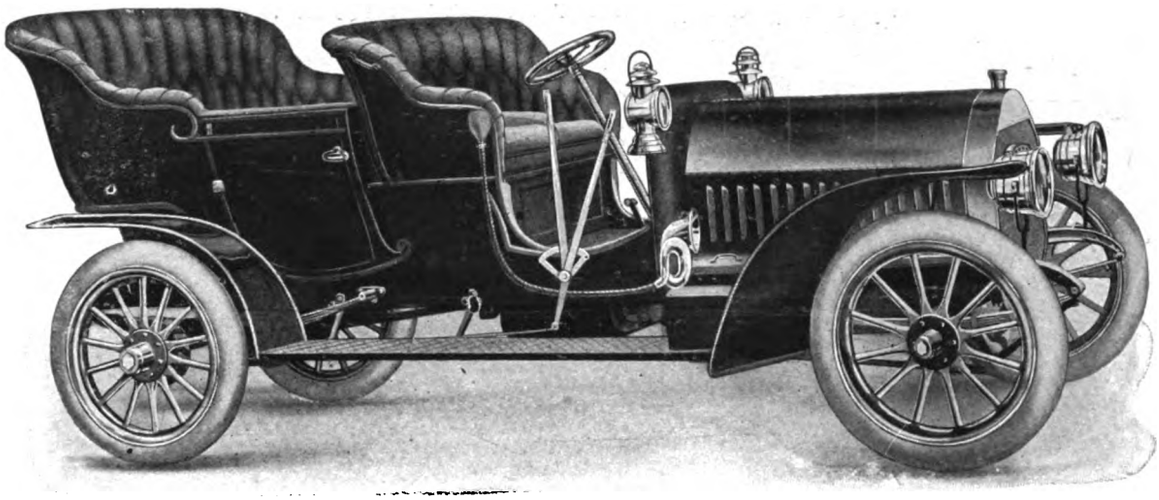
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Wayne

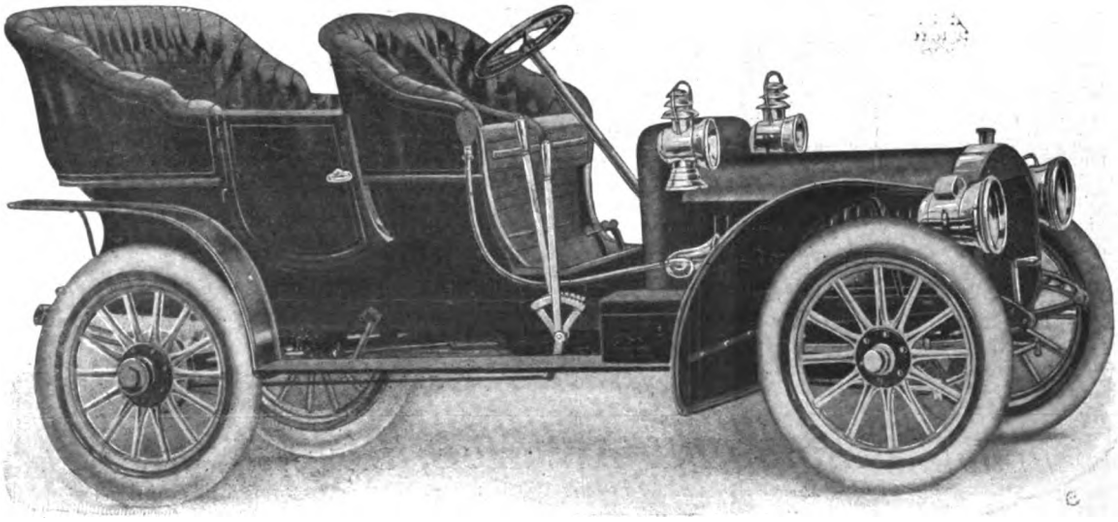
An Introduction to the Wayne Cars of 1906

The appreciation accorded our cars last year warrants us in greatly increasing our capacity and in placing before the automobile trade improved types of Wayne cars. The four models we now present are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high grade machines. In the Wayne cars of 1906 the automobilist will be sure to find a car suited to his needs.



Wayne Model F $3500

MOTOR, 4 cylinder vertical, cylinders 5½ x 5 cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark with quad coil and storage battery. TRANSMISSION, sliding gear with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive floating type. FRONT AXLE, 1 beam drop forged, one piece, nickel steel. WHEEL BASE, 114 inches. TIRES, 34 x 4½. EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, acetylene head lights with generator, tail lamp and tube horn.



Wayne Model K $2500

MOTOR, 4 cylinder vertical, cylinders 4¾ x 5, cast in pairs and water cooled. Engine develops by brake test 35 H. P. Cylinders and pistons ground. IGNITION, same as Model F. TRANSMISSION and axles same type as Model F. TIRES, 32 x 4. EQUIPMENT, same as Model F.

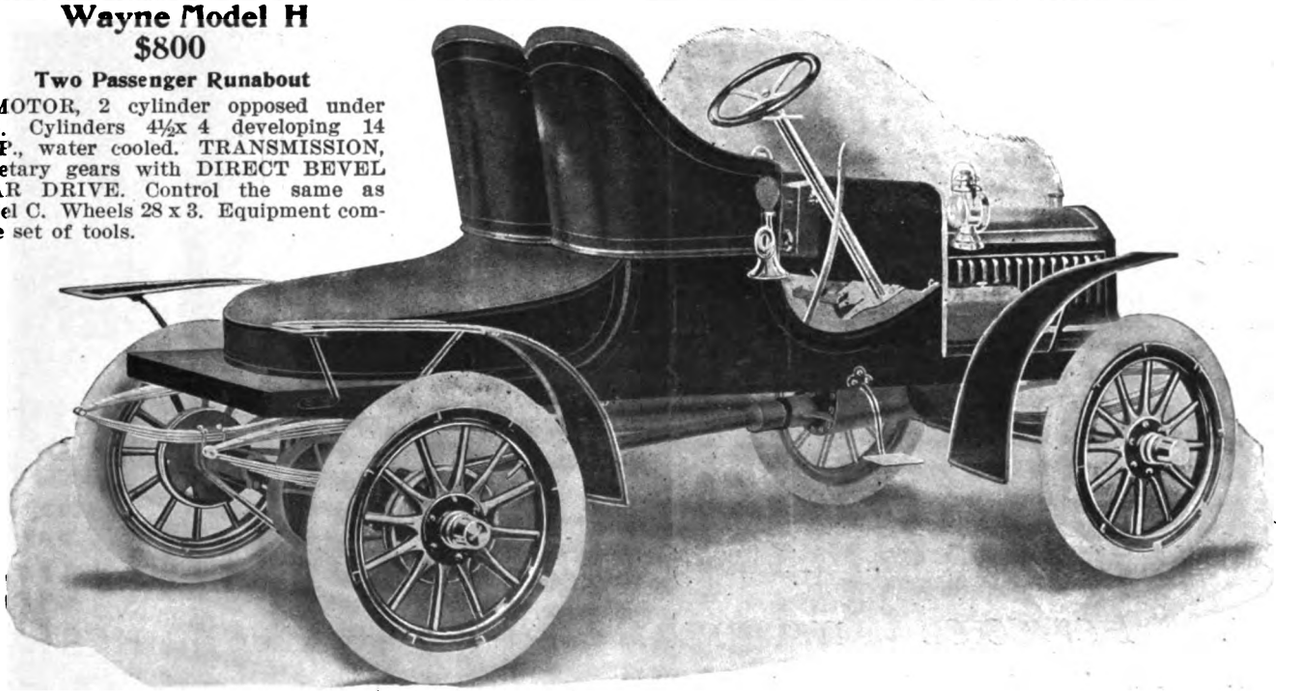
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Wayne

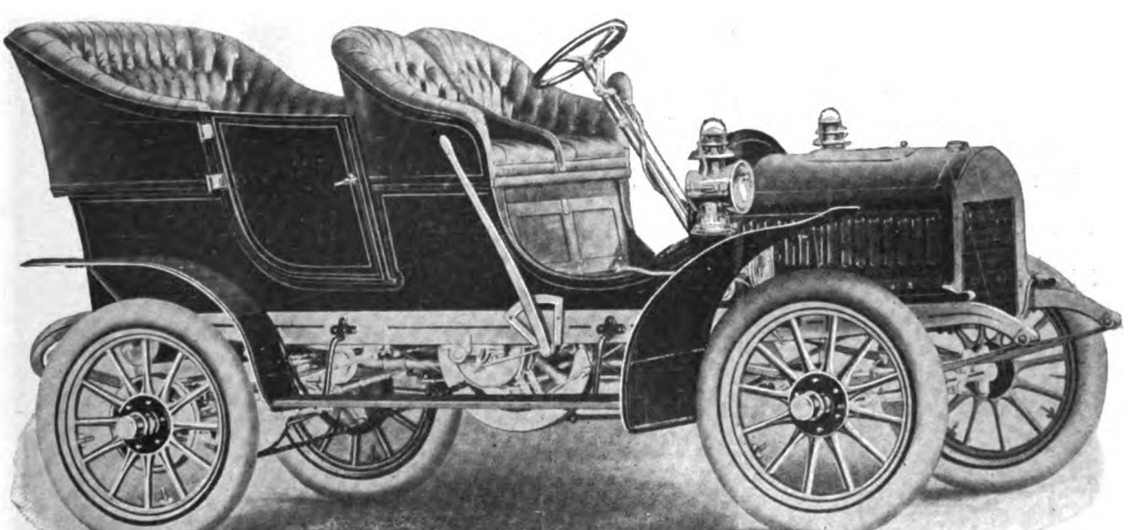
Wayne Model H
$800

Two Passenger Runabout

MOTOR, 2 cylinder opposed under hood. Cylinders 4½x 4 developing 14 H. P., water cooled. TRANSMISSION, planetary gears with DIRECT BEVEL GEAR DRIVE. Control the same as Model C. Wheels 28 x 3. Equipment complete set of tools.



The strong features of this car are the extreme simplicity and acessibility of the engine and transmission. The crank case and transmission case form one casting and the entire engine can be taken apart or assembled in half an hour.



Wayne Model C $1250

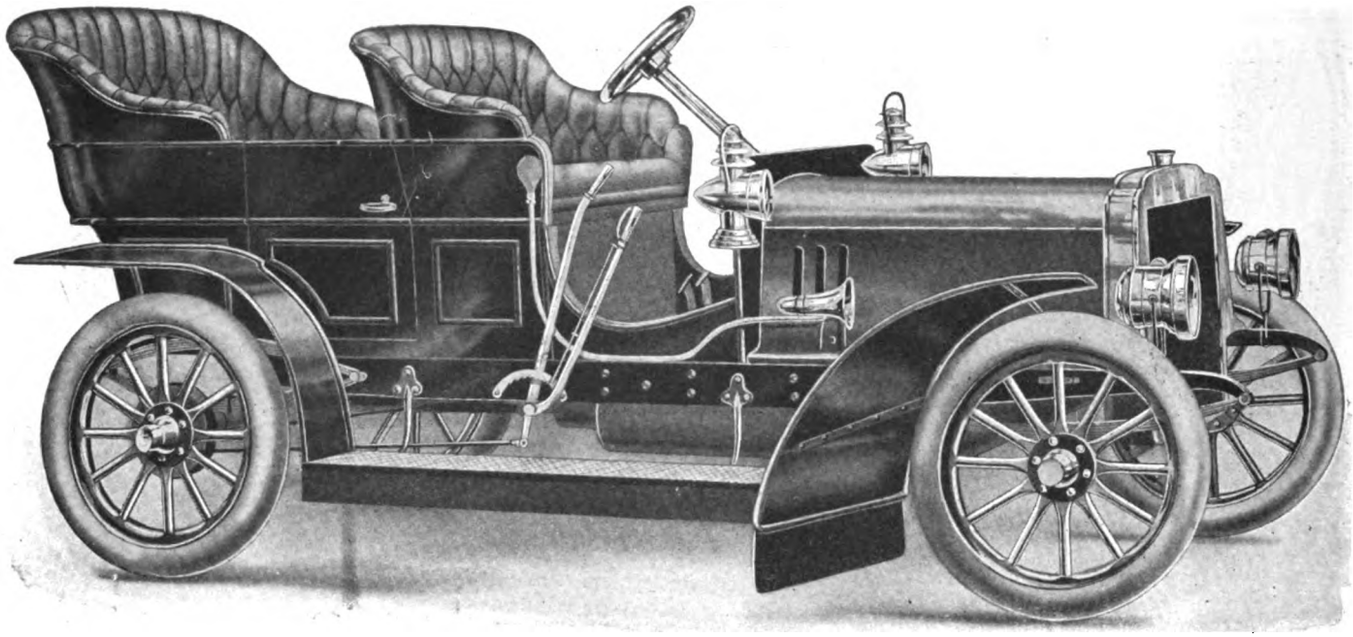
MOTOR, double opposed, of the standard Wayne type, with cylinders 5¼ x 5. Engine is hung under chassis frame and develops by brake test 20 H. P. *This is the same type of car which proved so successful last season, brought up to date and with all new improvements.* TRANSMISSION, is of the planetary gear type with chain drive. CONTROL is by a single lever which engages the high speed clutch and reverse. The slow speed and brake are controlled by foot pedals. TIRES 30 x 3½. EQUIPMENT, complete set of tools, side oil lamps, tail lamp and horn.

We want agents to write us about the Wayne cars for 1906. Agency arrangements can now be made for unoccupied territory. Write while you think about it, for full particulars.

Wayne Automobile Co., Detroit, Mich.

Member American Motor Car Manufacturers' Association, Chicago.

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1906 Ford 6 Cylinder Touring Car Price $2,500

6 cylinders 40 h. p. 4 to 50 miles per hour on high gear. *Perfected* magneto ignition—mechanical oiler, 114 inch wheel base, luxurious body for five passengers, weight 2000 pounds.

1906 Ford Runabout is as advanced as our touring car in design and even more surprising in price—will be fully illustrated and described early in December.

Both these Cars on exhibition at the New York Automobile Show.

Ford Motor Company

Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

Canadian Trade supplied by the Ford Motor Co. of Canada, Ltd., Walkerville, Ont.

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The dealer who secures the agency for

QUEEN AUTOMOBILES FOR 1906

is bound to have real and substantial

CAUSE FOR THANKSGIVING.

THREE NEW MODELS.

BIGGEST VALUE EVER OFFERED.

The QUEEN BEE

4 Cylinders, 26-28 H. P.

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list at $1 100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry.

C. H. BLOMSTROM MOTOR CO.,

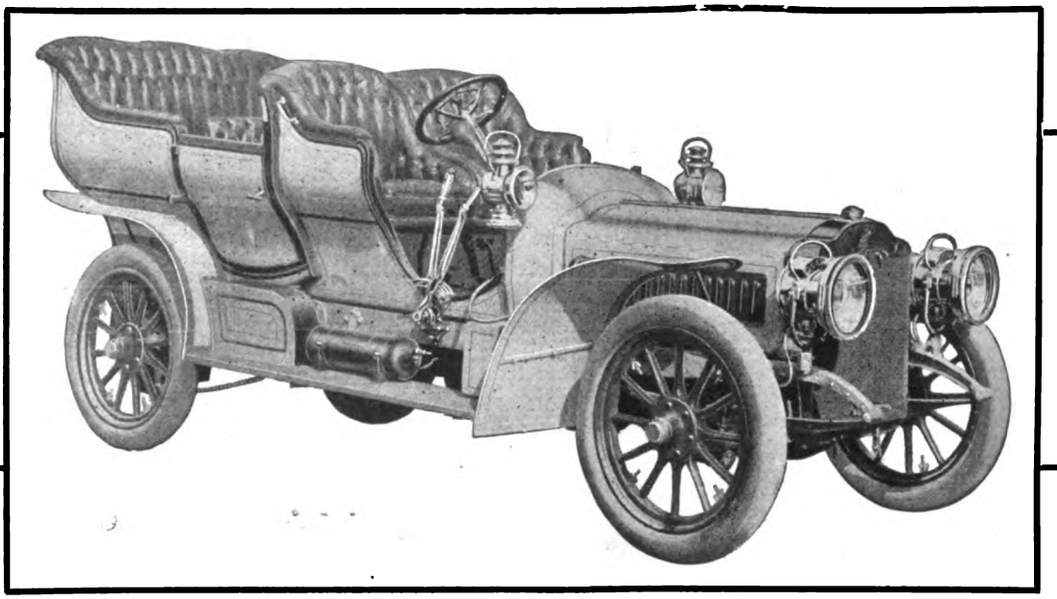
DETROIT, MICH.

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THE NEW THOMAS

Greatly Exceeds My Most Sanguine Expectations.

EXPERTS SAY IT IS A WONDER.



No customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best Car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level and climbs a 10 per cent. grade on the high speed at forty miles per hour, within an hour after it first leaves the shop, it is something that not one Car in a thousand will do.

Under favorable conditions, we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill climbing, quiet operations and mechanical superiority, and cordially urge disinterested Automobile experts everywhere to rigidly investigate our claims and compare our material, workmanship and design with the highest priced Cars in the world—and we will win the verdict.

E. R. THOMAS,

For the E. R. Thomas Motor Co., 1416 Niagara St., Buffalo, N. Y.

Member A. L. A. M.

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UNUSUAL RESILIENCY

IS JUST ONE OF THE THINGS WHICH MAKE



Diamond

SOLID SIDE WIRE TRUCK TIRES

The Most Desirable for Commercial Car Equipment.

Let us send you some interesting literature concerning sizes, weights, etc.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
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PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.

DETROIT—158 Jefferson Ave.
ST. LOUIS—3366 Olive St.
CHICAGO—167-169 Lake St.
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SAN FRANCISCO—606 Mission St.
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THE CELEBRATED BRAMPTON CHAINS

Made from Self-Hardening Steel.

ALL SIZES CARRIED IN STOCK

Henry S. Morris

Morris & Wilmarth,
Stock, Grain, Cotton and Coffee,
32 Broadway,
New York, July 22nd 1905

MEMBERS
NEW YORK STOCK EXCHANGE.
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CHICAGO AND MILWAUKEE

BRANCH OFFICES
1180 BROADWAY, N.Y.
191 MONTAGUE ST. BKLYN.
134 SO. 4TH ST. PHILA., PENN.

Mr. C. E. Miller,
#96 Reade Str.,
New York.

Dear Sir:-

I wish to write you regarding the Brampton chains which I purchased for my Franklin car.

No. 1 I have used all the time and have given it about as hard a pull as it is possible for a chair to receive. All over the mountains of Orange County, New York, and between New York, Philadelphia and Lakewood until I am tired of the road.

The long chain on the Franklin is a pretty stiff proposition and many, in fact, most of my friends state that their first trouble on that car is that chain breaks and I have met people who have worked for hours to get their chain fixed on the road, but I have never met a Brampton in trouble and mine so far has not a scratch on it.

No. 2 is in the paper in which your salesman wrapped it for me, and is resting in the bottom of the car waiting for No. 1 to break.

My partner, Mr. Wilmarth, President of the L. I. Automobile Club, has a Brampton on his Winton and has had practically the same result as myself. He got me in line for the Brampton and there I stay.

Very truly yours,

H. S. M. - G.

Henry S. Morris

THINK IT OVER

Our No. 7 Catalog is held as a book of reference by automobilists and will be mailed on request.

CHARLES E. MILLER MANUFACTURER, JOBBER EXPORTER AND IMPORTER

Home Office, 97, 99, 101 Reade St., New York City.

BRANCHES:

Broadway & 58th St., New York.
318 & 320 N. Broad St., Philadelphia, Pa.
202 & 204 Columbus Ave., Boston, Mass.
405 Erie St., Cleveland, Ohio

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An Investigation of GOODRICH TIRES

Mr. E. Shirts, cashier of the Citizens National Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new. His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with Goodrich Tires 3 in. x 30 in. I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and I found them in perfect condition, not even rim-rusted.

I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.



Rims branded in the channel with this copyright mark have been ispected and pronounced perfect. We guarantee our tires only on rims so branded.

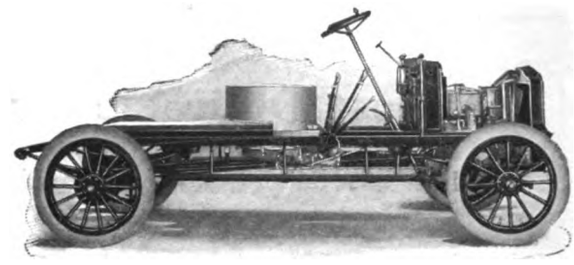
The B. F. Goodrich Company

Akron, Ohio.

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 909 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 420 Superior St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.

The Incomparable WHITE

The Car for Service.



Above is shown the chassis of the Model "F" White car which we are now delivering with touring car, runabout, limousine, victoria and landaulet bodies.

Steam power as utilized in the White car, possesses unique advantages. There is absolutely no noise, no odor, no vibration and the speed of the car is controlled entirely by throttle. There is an ever-present reserve of power which is often found most useful.

The White steam generator is totally unlike any other steam-making devise ever designed. To illustrate the radical difference, we might point out that in our generator the water is at the top and the steam at the bottom. In every other type of boiler, the steam is at the top and the water at the bottom. The safety, simplicity and reliability of the system is demonstrated by the performance of the thousands of White cars now in use.

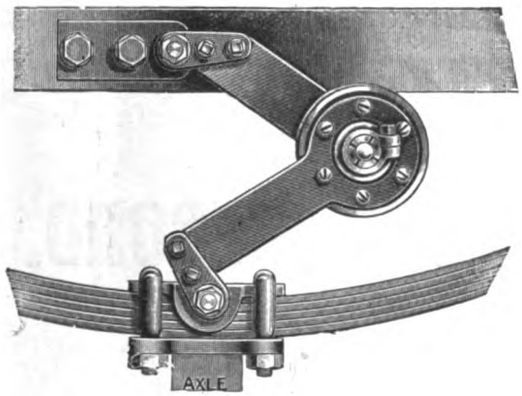
WRITE FOR WHITE BULLETINS WHICH TELL THE STORY OF WHITE VICTORIES.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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TRUFFAULT-HARTFORD SUSPENSION



RESULTS OF VANDERBILT ELIMINATION CONTEST

On Long Island Course. Sat., Sept. 23, Average Time, Almost 57 Miles per Hour,

The cars of these two leaders were equipped with the TRUFFAULT-HARTFORD SUSPENSIONS, which enabled them to win. Only 59 seconds separated them.

1st. DINGLEY, (Pope-Toledo, 60 H.P.) 2 Hours, 50 Seconds.
2d. TRACY, (Locomobile, 90 H.P.) 2 Hours, 1 Minute, 49 Seconds.

The third car ran 19 minutes behind the leader
AND WAS WITHOUT THE TRUFFAULT-HARTFORD SUSPENSIONS.

Racing or Touring, f you want to Finish Among the Leaders Equip Your Car with

THE TRUFFAULT-HARTFORD SHOCK ABSORBER.

Hartford Suspensions Were on All the Winning Cars in These Prominent Contests Recently Held.

Glidden Tour; French Eliminating Trials; Gordon Bennett Race; Ardennes Circuit Race, French; 1,000 Mile Track Record. Guy Vaughn.

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President — 69 Vestry Street, New York City

Volier Horns



Think of the reeds! Think of the bulbs!

Have you even heard of a horn being offered as
"BETTER THAN THE VOLIER?"

THE POST & LESTER CO., HARTFORD, CONN

Sole American Distributors of Volier Horn.

A MILD COMPARISON

A comparison of the record made by the "HAYNES" car in the elimination race for the Vanderbilt cup, with that of far more powerful cars that were allowed to enter the race is

—most interesting

Get a record of the two events—

—and compare

Put the "HAYNES" record in the trials beside that of some of the cars that were allowed to enter the real race—

—and compare.

Study what the "HAYNES" did, and what some of the others DIDN'T DO—

—and compare.

A few LIVE Agents wanted in a few localities. WRITE QUICK for particulars.

We are booking orders for exact duplicates of our Vanderbilt entry in the order of their receipt.

The Haynes Automobile Co.,

Kokomo, Indiana

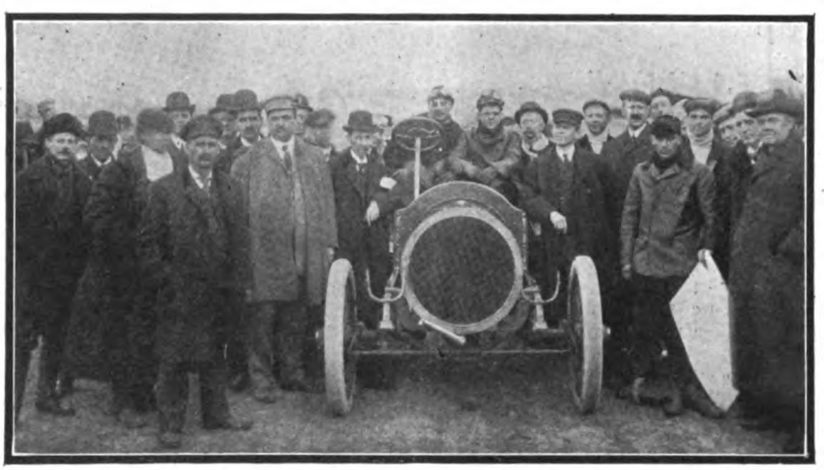
New York — **Chicago**

Members A. L. A. M.

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National

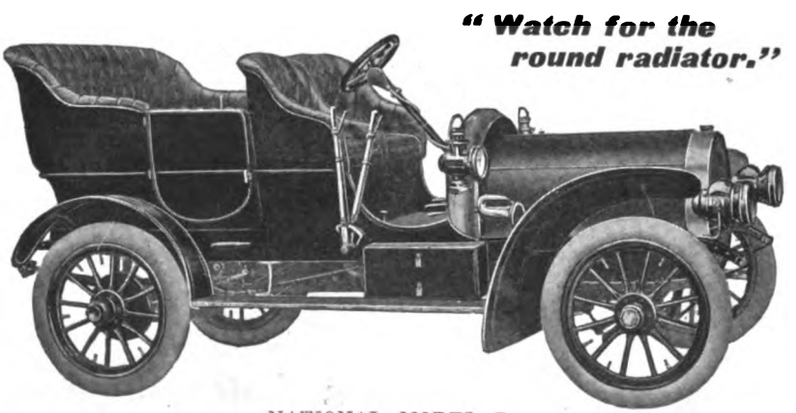
BREAKS WORLD'S 24 HOUR RECORD.



The National car and officials after finish of the 24 hour run.

A NATIONAL STRIPPED STOCK CAR at INDIANAPOLIS, November 16-17th, made **1094 3-16** miles in **24 hours, breaking the former WORLD'S RECORD** by **78 9-16 miles,** and **1,000 miles in 21 hours, 58 minutes, 4-5 seconds,** breaking the former record by **1 hour, 35 minutes and 19 1-5 seconds.** ALSO BREAKING MANY OTHER RECORDS TOO NUMEROUS TO MENTION IN THIS SPACE AND **GIVING A MOST CONVINCING DEMONSTRATION OF THE UNFAILING RELIABILITY OF NATIONALS.**

"Watch for the round radiator."



NATIONAL MODEL D.
One of the same kind fully equipped.

Write us for
anything else
you want to know.

NATIONAL MOTOR VEHICLE COMPANY,

1007 East 22nd Street, INDIANAPOLIS, IND.

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DID ANYONE EVER HEAR

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

ROYAL

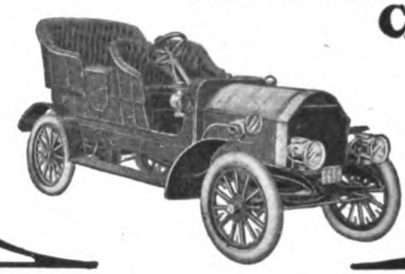
We have a full description of 1906 model ready to mail to you, if you will send us your address. Will also mail booklet explaining performance of 1906 model in Vanderbilt Trial Race.

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.
Member A. L. A. M.

AGENTS: C. A. DUERR & CO., New York, N.Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE SUPPLY CO., Lim., Toronto: MOTOR SHOP, Philadelphia, Pa.: WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS PIERCE & CO., Syracuse, N. Y.; THOMPSON SCHOEFFEL CO., Rochester, N. Y.

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.

SOLARS



FOR AUTOS CYCLES OR LAUNCHES

Mr. Dealer, why not handle a line that you know will satisfy your customers instead of taking chances on "Just as good" lamps. Your profit in as much or more on Solars and your customers "stick."

Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO., Kenosha, Wis.
NEW YORK OFFICE: 11 Warren Street

The Expected Revolutien Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should ***not*** buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the ***two*** cycle two cylinder Elmore engine.

Understand—the ***two*** cycle two cylinder Elmore engine produces ***two impulses every time the fly-wheel turns.***

As you know, the two cylinder ***four*** cycle furnishes only ***one*** impulse every ***fourth*** time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached ts climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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MICHELIN

TIRES OF THE HIGHEST CLASS.

MR. WILBERN SENDS THE FOLLOWING UNSOLICITED TESTIMONIAL.

Mr. E. D. WINANS, Sec'y and Gen'l Manager,
Michelin Tire Co. of New York.

Cincinnati, O., Nov. 3, 1905.

Dear Sir:—Thirty thousand miles on Michelin Tires covering twelve Countries in Europe, above the clouds in Switzerland, below the sea in Holland, from Bull Fights in Spain to Chicken Fights in England, down Historic Rhine, and back again to the "land of grind organ and Monks." I have bought all kinds of tires, every known make; but the MICHELIN are the best, last the LONGEST.

With pleasure I can recommend them to all tourists. Will tour again next Spring and Summer in Norway, Sweden, England, Ireland and Scotland, and will wear nothing but MICHELIN Tires on my 40 H. P. Hotchkiss. Very truly,

(Signed) EDWARD V. WILBERN,
Director "Provident Savings Bank and Trust Co.," Cincinnati, O.

If you want the best, follow Mr. Wilbern and buy MICHELIN TIRES.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

F. D. WINANS, General Manager,

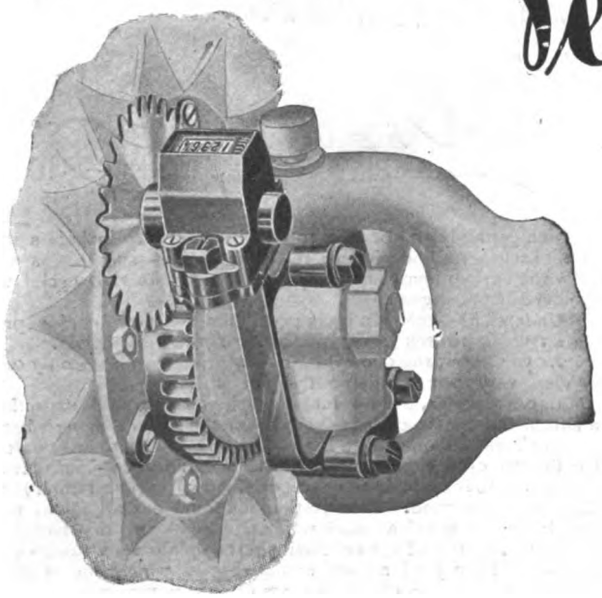
Telephones—{760 / 761} Madison Square, New York.

6 West 29th Street, New York

BRANCHES IN PRINCIPAL CITIES OF UNITED STATES.

Veeder

"It's Nice to Know
How Far You Go,"
Veeder Odometers.



Every Veeder Odometer we send out is designed for the particular make and model car for which it is ordered. That ***insures accuracy.***

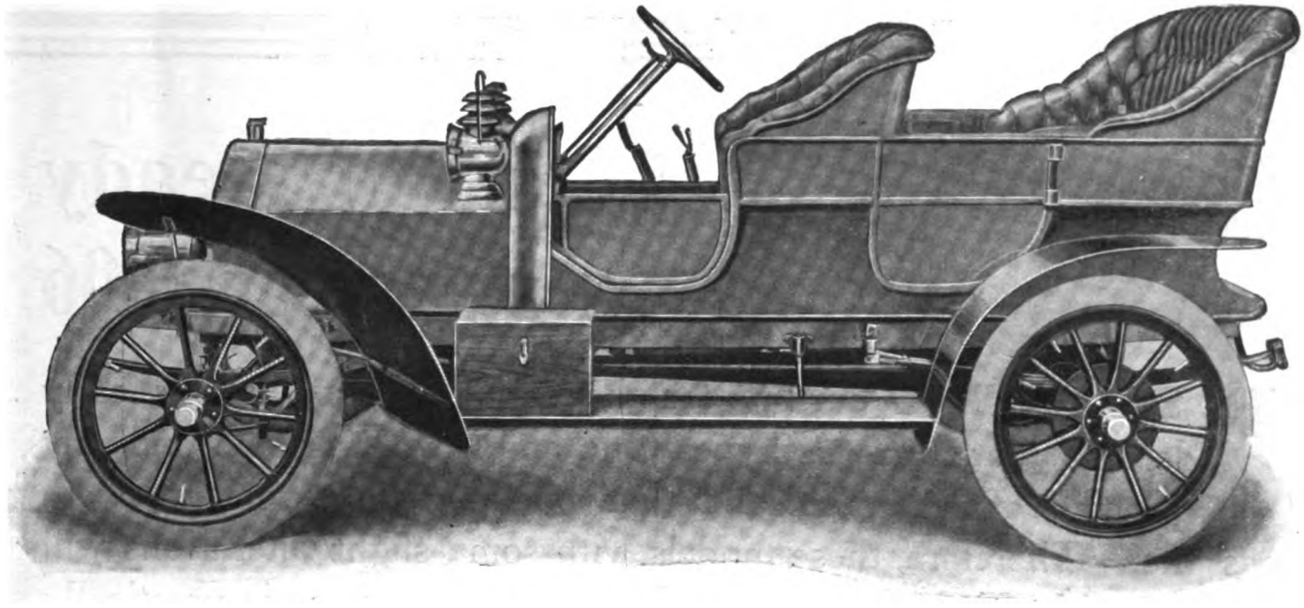
You will want an Odometer when you go touring this summer. Ask your dealer or send to us for catalog.

THE VEEDER MFG. CO.,

62 Sargeant Street, Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

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The Oldsmobile Palace Touring Car, Model "S," price, $2,250, detailed description of which appeared in this publication last week, is notable equally for its carefully proportioned body, its strong, simple and well-balanced chassis and the wonderful attention to detail evident in every part of its construction. The car is low hung, yet has plenty of clearance, and the long wheel base of 106 inches gives a rangy appearance, which is most attractive. The four-cylinder vertical water-cooled motor is of the most thoroughly approved type, and easily develops from 24 to 26 h. p. The tendency to create dust is lessened by the construction of the dust pan and longitudinal arrangement of all parts hung beneath the car, all of which is conducive to general comfort in touring. The transmission is sliding gear, 3 speeds forward and reverse. The control is of the selective type, the changes being made with a single lever. The brakes are very strong and positive in action. The transmission brake is operated by a foot lever, while the rear hub brakes are controlled by a hand lever. Complete equipment, consisting of two acetylene head lights and generator, two oil lamps and one oil tail lamp, together with tools, etc., is furnished with this car.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K2 Model L.... Traffic Cars....

Name .....

Address .....

.....

CUT COUPON HERE

CALENDAR COUPON

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LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

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Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K2

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Rambler Cars of steady service for 1906

IN SELECTING our line for the coming season it was early decided that Surreys, Types One and Two, were beyond any question of retirement and that but few improvements were possible. Therefore, these models with some slight alterations will be continued. To these are added Type Three, which is practically an elaboration of Type One, the power plant and chassis remaining the same, except somewhat lengthened to accommodate a larger and longer body.

These models are equipped with the tried and proven Rambler power plant, comprising our double opposed motor and planetary pattern transmitting gear, and are too well known to the trade and public to require extended description at this time.

Prices: Type One $1,200, Type Two, $1,650, Type Three $1,350, all with full equipment of lamps, horns, tools, etc.

"The Latest of the Ramblers," the strictly 1906 product, comprises four models. Model fourteen is a modern medium weight touring car equipped with a four-cylinder vertical motor 20-25 horse power, with sliding type transmitting gear, giving three forward speeds and reverse.

Final drive is by propeller shaft and bevel gear to the differential on the rear axle.

A notable feature is the method of connecting and bracing this shaft in which the universal joint is at the forward end and is entirely enclosed, running in an oil bath.

The external design is along most modern lines with a wheel base of 106 inches.

The selling price of this model is $1,750 with complete equipmnet.

Model Fifteen is a heavier car with similar but more powerful equipment, the motor being 35-40 horse power and the final drive by individual chain to each rear wheel. The body is practically the same as in Type Fourteen but longer and larger, the wheel base being 112 inches. Price, $2,500.

Model Sixteen is a most luxuriously appointed Limousine on the Model Fifteen chassis, selling at $3,500.

The Rambler runabout for 1906 is a fitting heir to the reputation gained by the earlier Ramblers of this type. It is equipped with a double opposed motor of 10-12 horse power, placed longitudinally in the frame and driving through the Rambler planetary gear. As a Runabout with 3 inch tires it will sell at $800 and with detachable tonneau and 3 1-2 inch tires at $950.

Catalogue and full descriptive matter will be mailed upon request, but a careful personal examination of these cars at our various branches and agencies, will convince you that whatever may be your requirement, in service or price, the Rambler is the car you need.

Thos. B. Jeffery & Co.

Main Office and Factory. - - - - - Kenosha, Wis., U. S. A.

Branches:

Boston, 145 Columbus Ave. Chicago, 302-304 Wabash Ave. Philadelphia, 242 N. Broad Street.
Milwaukee, 457-459 Broadway. San Francisco, 10th and Market Streets.
New York Agency, 134 W. 38th Street. Representatives in all leading cities.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, November 23, 1905. No. 9

CADILLAC FIXES FIGURES

Long Awaited Prices Finally Announced—Runabout Reduced and a "Special" is Added.

The prices of the Cadillac cars for 1906, concerning which there has been no little speculation, were settled this week. There is nothing sensational, however, about the new figures. The 10 horsepower single cylinder runabout, which this year listed at $850, and which proved the biggest seller in the trade, has been reduced to $750; when fitted with a tonneau, however, the old price, $950, will prevail.

Of the new four cylinder line, the 30 horsepower model, designed to carry four passengers, will sell for $2,500, and the 40 horsepower model, for six passengers, for $3,500.

In addition, it has developed that the Cadillac Motor Car Co. will also build, to order only, a four cylinder 30 horsepower runabout, for two passengers, the price of which will be $2,400.

The four cylinder models are said to have "assimilated" all the good features that made the runabout such a remarkable seller, and also to embody a number of original points that are in keeping with them.

Insurance Ban is Partly Lifted.

Unexpectedly some of the insurance companies have "come down" from their stand which caused a majority of the New York dock owners or lessees to prohibit the use of motor wagons on their properties. They have added a "rider" to their policies permitting the use of motor vehicles of whatever nature, assuming the risk without extra charge. As one of the docks thus "liberated" is used chiefly by cotton carrying boats, it would seem that there is now no good reason why the ban should not be entirely lifted.

Three More Join the M. & A. M.

The William Cramp & Sons' Ship and Engine Building Co., Philadelphia, whose manganese bronze automobile castings, coupled with their big reputation, gave them immediate standing in the automobile trade, have been elected to membership in The Motor and Accessory Manufacturers. O. W. Young, Newark, N. J., and the Nungesser Electric Battery Co., Cleveland, Ohio, also have been added to the roll.

Matheson Makes It a Million.

The Matheson Motor Car Co., of Holyoke, Mass., which will shortly move into its new factory at Wilkes-Barre, Pa., has increased its capital to $1,000,000 and taken out its papers under the laws of Pennsylvania. Of the stock $400,000 is preferred, of which $141,180 is paid in, and $700,000 is common, of which $416,000 is paid in. The corporators named are C. W. Matheson, F. F. Matheson, of Holyoke, Mass.; C. U. Clark, Grand Rapids, Mich; J. F. Mueller and F. A. Hinchman, Detroit, Mich.

Parkersburg Tempts Oscar Lear.

An effort is being made by the Parkersburg (W. Va.) Board of Trade to induce the Oscar Lear Automobile Co. to move its plant from Columbus, Ohio, to that city. Parkersburg has offered the company ten acres of ground with good shipping facilities, will construct a brick factory building 150x300 feet, with concrete floors, and also will take stock in a company if additional capital is needed.

Commercial Car Plant for Packard.

The Packard Motor Car Co. last week purchased a tract of six acres adjoining their present plant in Detroit, thereby exactly doubling their site. On the newly acquired ground, it is the Packard people's intention to erect a factory for the exclusive manufacture of their commercial vehicles.

Buick Invades New York.

The H. J. Koehler Co., Newark, N. J., which has had general oversight of the Buick interests in this part of the country, has opened a Buick branch in New York at Fifty-first street and Broadway. Incidentally, the Buick people will add to their line a four-cylinder car of 35 horsepower.

Abandon Their Low-Priced Runab ut.

The American Motor Co., Brockton, Mass., who about a year since undertook to build a popular priced runabout, have ceased endeavors in that direction. They will stick to their original business, the manufacture of motor bicycles.

WHO'LL BE IN THE ARMORY

A. C. A. Makes its Showing of Hands—Few of the "Independents" are Missing.

Although the allotments of space have been made for the Automobile Club of America's show in the 69th Regiment Armory, New York, they probably will not be made public until after the 1st proximo. As always, some shifting will be made, and the task of allotment really will not be accomplished until this is done. Those who have secured space, however, are as follows:

Main Floor.

White Sewing Machine Co., Thos B. Jeffery & Co., Baker Motor Vehicle Co., Grout Bros. Automobile Co., Lane Motor Vehicle Co., Pungs-Finch Co., Lozier Motor Co.

Palais De L'Automobile (H. Neubauer), E. W. Sutphen (English Daimler), Daimler Mfg. Co., Renault Freres Agency, Inc.; Panhard & Levassor, Mors Automobile Co., Gobron-Brille (Henry F. Gotz), American Peugeot Automobile Co., Napier Motor Co. of America, Charron, Girardot & Voight, Richard-Brasier (E. B. Gallaher).

The Motor World, National Motor Vehicle Co., Maxwell-Briscoe Motor Co., Premier Motor Mfg. Co., Jackson Auto Co., Dayton Motor Car Co., Ford Motor Co., Ardsley Motor Car Co., Wayne Automobile Co., Mitchell Motor Car Co., Marion Motor Car Co., Bartholomew Co., Austin Auto Co., Buckeye Mfg. Co., Acme Motor Car Co., Moon Motor Car Co., Nordyke & Marmon Co., Moline Auto Co., St. Louis Motor Car Co., Knox Motor Truck Co., Rea Motor Car Co., Duryea Power Co., E. W. Bliss Co.

Corbin Motor Vehicle Corporation, Newcomb Motor Co., Lansden Co., Hendee Mfg. Co., American Motor Co., Norris N. Mason, Aster Co., Motor Way, Central Automobile Co. (Archer & Co.), A. J. Picard, Palmer & Christie, C. H. Blomstrom Motor Co., E. H. V. Co, Moore Automobile Co, Oscar Lear Automobile Co., Welch Motor Car Co., Charles E. Miller, American Locomotive Co., George B. Adams, the Rainier Co., Cleveland Motor Car Co., Cryder & Co., The Automobile.

Hartford Rubber Works Co., Gray & Davis, Goodyear Tire & Rubber Co., Twentieth Century Mfg. Co., Veeder Mfg. Co., Rose Mfg. Co.,

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Diamond Rubber Co., Badger Brass Mfg. Co., B. F. Goodrich Co., Diamond Chain & Mfg. Co., Warner Instrument Co., Steel Ball Co., Dayton Electrical Mfg. Co.

Fisk Rubber Co., Briscoe Mfg. Co., Warner Gear Co., National Carbon Co., Timken Roller Bearing Axle Co., Light Mfg. & Foundry Co., Gabriel Horn Mfg. Co., Shelby Steel Tube Co., International A. & V. Tire Co., R. E. Dietz & Co., C. F. Splitdorf, Baldwin Chain & Mfg. Co., G. & J. Tire Co., American Ball Bearing Co., Standard Welding Co, Remy Electric Co., W. H. Brown, Wray Pump & Register Co., Aurora Automobile Machine Co., Edmunds & Jones Mfg. Co., Herz & Co., Eastern Carbon Works, Pennsylvania Rubber Co., Hyatt Roller Bearing Co., Hartford Suspension Co., Whitlock Coil Pipe Co., Webb Co., Morgan & Wright, Brown-Lipe Gear Co.

Whitney Mfg. Co., Iron Clad Mfg. Co., Spicer Universal Joint Mfg. Co., Firestone Tire & Rubber Co., Connecticut Telephone & Electric Co., Inc., The Horseless Age, Byrne Kingston & Co., Springfield Metal Body Co., Wheeler Mfg. Co., Parish & Bingham Co., the Hess-Bright Mfg. Co., Sprague Umbrella Co., S. F. Bowser & Co., Inc.

New York & New Jersey Lubricant Co., Trade Advertising & Publishing Co., McCord & Co., Prest-O-Lite Co., Oliver Mfg. Co., R. E. Hardy Co., Standard Roller Bearing Co., Republic Rubber Co., McGiehan Odometer & Mfg. Co., A. W. Harris Oil Co., Continental Rubber Works Co., Belden Automobile Transfer Co., Leon Rubay, Duff Mfg. Co., Motor Car Equipment Co., F. W. Ofeldt & Sons, Sibley & Pitman, New York Sporting Goods Co., Auto Supply Co., Manhattan Auto School, Railway Appliance Co., Aster Co., Gearless Transmission Co., Klean-Al Mfg. Co., William Hjorth, William Cramp & Sons, Edison Storage Battery Co., Worcester Pressed Steel Co., the Continental Caoutchouc Co., Hill Mfg. Co., Cooks Railway Appliance Co. Witherbee Igniter Co., Saks & Co., Scandinavian Fur & Leather Co.

Gymnasium.

Hatch & Brittan, Survey Map Co., A. R. Mosler & Co., Mason Kipp Mfg. Co., Consolidated Rubber Tire Co., F. M. Brown, Mills Mfg. Co., Sherwin-William Co., Safety Motor Power Co., Dac Auto Supply House, St. John Rubber Tire Co., Gray-Hawley Mfg. Co., F. A. Goebel, Auto Lock Club Co., Uncas Specialty Co., John Boyle & Co., Republic Rubber Tire Co., Carl E. L. Lipman, Judson & Downing, Kinsey Mfg. Co., Francois Richard, Post Mfg. Co., Anderson Spark Coil Co.

Basement.

H. H. Thorp, Oscar Werner, Wolverine Automobile & Commercial Vehicle Co., Iroquois Motor Car Co., Crawford Automobile Co., John Dolson & Son, Rausch & Lang Carriage Co., Julian P. Denison, Iroquois Iron Works, British Westinghouse Electric & Mfg. Co., Ltd., Autocar Equipment Co., Arthur J. Slade, McCrea Motor Truck Co., St. Louis Car Co., Rapid Motor Vehicle Co., Cantono Electric Tractor Co., Logan Construction Co., Johnson Service Co., Viqueot Co., Western Tool Works, Jones-Corbin Motor Co., Dorris Motor Car Co., Monarch Automobile Co., Twombly Power Co., York Automobile Co., Berkshire Automobile Co., Twyford Motor Car Co., Mitchell Punctureless Pneumatic Tire Co.

The Week's Incorporations.

New York City, N. Y.—Leon Rubay, under New York laws, with $25,000 capital; to deal in automobiles and supplies. Corporators—Leon Rubay, C. N. Pitcher and H. J. Hinley.

Newark, N. J.—Roseville Motor Co., under New Jersey laws, with $25,000 capital; to make motor vehicles, engines, etc. Corporators—Ernest U. Mott, Henry Setlow and George M. Barnes.

Providence, R. I.—C. D. Snow Co., under Rhode Island laws, with $25,000 capital; to conduct a general automobile business. Corporators—Calvin D. Snow, Horace N. Williams and Minnie L. Snow.

Wilkes-Barre, Pa.—Matheson Motor Car Co., under Pennsylvania laws, with $1,100,000 capital. Directors—C. W. Matheson, F. F. Matheson, C. U. Clark, F. Miller and F. A. Hinchman.

Newark, N. J.—Newark Garage & Repair Co., under New Jersey laws, with $10,000 capital; to manufacture, store, repair and sell automobiles. Corporators—George Paddock, Leonard B. Zusi and Andrew Schwind.

New York City, N. Y.—William E. Kleine & Co., under New York laws, with $25,000 capital; to manufacture wheels, shafts and spokes for all kinds of vehicles. Corporators—William E. Kleine, Josephine E. Kleine and Louis P. Alheim.

Miami, Fla.—Miami Transfer Co., under Florida laws, with $50,000 capital; to conduct an automobile stage line. Corporators and officers—President, James T. Brundage; vice-president and general manager, J. M. Hanley; secretary-treasurer, S. L. Patterson.

Miami, Fla.—Miami Automobile Co., under Florida laws, with $10,000 capital; to deal in automobiles and conduct a stage line. Corporators and officers—President, W. A. Lofton; vice-president and treasurer, R. B. Einig; secretary, M. K. Whitten.

In the Retail World.

L. Gorham Harrison has taken the agency in Boone, Stephenson and Winnebago counties, Illinois, for the Stevens-Duryea cars. He will locate in Rockford.

Owing to the stress of other business, C. H. Torrey has resigned the Knox agency in New Haven, Conn. He has been succeeded by E. T. Hale, 166 St. John street.

James F. Smith, a Springfield (Ill.) dealer, has closed the doors of his establishment at No. 411 East Washington street. His liabilities are $5,851.60 and his assets, $1,156.60.

Thomas A. Egan and F. G. Grinnell, of Narragansett Pier, R. I., will establish a garage in connection with the Clarendon Hotel at Sea Breeze, Fla. The resort is on the Ormond-Daytona beach.

Peter C. Rutan, of Port Jervis, N. Y., is building a one story concrete garage, 30x100 feet at Middletown, N. Y., ground having been broken last week. Rutan is handling that Cadillac car.

Fire in the Caswell garage on Moody street, Lowell, Mass., on Thursday of last week did damage to the extent of about $15,000. Several valuable touring cars, some of which were insured, were destroyed. It is thought the fire started in the repair shop, but the cause is not ascribed.

Corning, N. Y., is to have its first garage when the contemplated building of the Crystal City Cycle Co. is completed. It will be of concrete, one story high, and its dimensions 42x70 feet. A stock company, the Corning Automobile Co., with George Wolcott at its head, will probably be formed.

Garnett Zorn, John M. Strauss and Harry A. Volz have taken over the business of the Simpson-Strauss Automobile Co., No. 518 to 522 Third street, Louisville, Ky., Lee Simpson retiring, and will reorganize the Zorn-Strauss Co., Inc. In addition to the Pierce and Franklin lines, the new company will handle the Stevens-Duryea.

George M. Tinker, of Waltham, Mass., and Charles L. Tinker, of Boston, doing business in the latter city under the firm name of Tinker Bros., automobile repairers, at No. 247 Columbus avenue, have filed a voluntary petition in bankruptcy. Their liabilities amount to $5,957, of which $281 is secured. There are about eighty unsecured creditors. The assets are estimated at $3,386.

Changes in the Detroit Trade.

Jefferson avenue, on which the automobile colony of Detroit is located, has recently been the scene of a good many changes. Young & Miller, Elmore agents, who did much to popularize the sale of elmore cars, have been succeeded by the Lee-Bock Auto Garage.

Charles Grant, manager of the Ford Motor Co.'s local branch, has resigned and will go into business on his own account. It is reported that he has secured the agency of the Buick car.

The Seidler-Miner Co. is no longer to have the local agency of the Queen line, which will be hereafter handled from a salesroom which is being fitted up at the factory of the Blomstrom Motor Co.

Harry Cunningham, manager of the Detroit Automobile Co., the Winton-Franklin agents, has resigned to take the management of the Ford Motor Co.'s new branch at Cleveland, Ohio. This will be located on Euclid avenue.

E. McMasters, who resigned the management of the Detroit branch of the Hartford Rubber Works Co. to accept a similar position with the Firestone Tire & Rubber Co., has been succeeded by Fields, who comes from the Denver branch of the Hartford concern.

The Maxwell-Briscoe-McLeod Co. is the title of a new concern which will act as the distributing point for Maxwell cars in several States. They have leased the building hitherto occupied by the Oldsmobile Co., of Detroit, on Michigan avenue. They expect to carry a full stock and everything necessary to properly handle a large business.

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CHICAGO GETS MORE ROOM

Secures an Armory and thus obtain Needed Show Space—Those who are Booked.

Chicago finally has found space for all those who desire to exhibit at its show in February next. The Coliseum was not large enough to house all of them, and the manager was hard put to it. No amount of cramping helped matters, and it seemed that some twenty manufacturers of cars must be crowded out, when he hit upon the securing the 1st Regiment Armory, which is connected with the Coliseum by an asphalted alley about 300 yards long. He promptly secured it and thus obtained 20,000 additional feet of floor space.

The asphalted alley will be thoroughly cleansed, lighted and decorated, and an effort will be made to cover it. The appointments at the armory will be the same, in every detail, as those at the Colisum. A duplicate set of tickets will be issued, so that the public will be admitted to both buildings for one admission fee.

As a further guarantee that the armory will be made of at least as great importance as the Coliseum, agents' passes, good for both buildings, will be issued at the armory only, railroad tickets will be signed there and all conventions which are to take place during the week will be held in that building.

The allotments of space have been made, but until the acceptances have been received they will not be made public. The makers of cars who have been taken care of are as follows:

In the Coliseum.

Packard Motor Car Co., Elmore Mfg. Co., E. R. Thomas Motor Co., Olds Motor Works, Haynes Automobile Co., Locomobile Co of America, National Motor Vehicle Co, Electric Vehicle Co., Pope Motor Car Co., Pope Mfg. Co., Woods Motor Vehicle Co., Winton Motor Carriage Co., T. B. Jeffery & Co., Peerless Motor Car Co., Knox Automobile Co., F. B. Stearns Co., Studebaker Automobile Co., J. Stevens Arms and Tool Co., Autocar Co., George N. Pierce Co., White Sewing Machine Co., St. Louis Motor Carriage Co., Apperson Bros. Automobile Co., Royal Motor Car Co., H. H. Franklin Mfg. Co., Northern Mfg. Co., Cadillac Automobile Co.

Ford Motor Co., Premier Motor Mfg. Co., Reliance Motor Car Co., Baker Motor Vehicle Co., Wayne Automobile Co., Duryea Power Co., Buick Motor Co., Waltham Mfg. Co., Corbin Motor Vehicle Corporation, Vehicle Equipment Co., Chicago Automobile Co., Bartholomew Co., Tincher Motor Car Co., Auburn Automobile Co., Jackson Automobile Co., Austin Automobile Co., Pungs-Finch Automobile and Gas Engine Co., Dayton Motor Vehicle Co., Model Gas Engine Co., Pierce Engine Co., Holsman Automobile Co.

In the Armory.

Welch Motor Car Co., Monarch Automobile Co., Lozier Motor Co., Acme Motor Co Adams Co., Blomstrom Motor Works, Wolverine Automobile Co., Reo Motor Car Co., Maxwell-Briscoe Co., Buffalo Electric Carriage Co., Marion Motor Car Co., Rapid Motor Vehicle Co., Moline Automobile Co., Dolson & Sons Co., C. P. Kimball & Co., Cleveland Automobile Co., Oscar Lear Automobile Co., Synnestvedt Machine Co., Wayne Works.

Rainier Bros., Western Automobile Co., Berkshire Automobile Co., Logan Construction Co., Detroit Automobile Co., Kansas City Automobile Co., J. W. Moon Buggy Co., Buckeye Automobile Co., Knight & Kilbourne, McCrea Truck Co., Smith & Mabley, Inc.; Panhard & Levassor (Ralph Temple), H. S. Michaels Co., Automobile Importing Co.

Sues for an Accounting.

Alfred O. Dunk, Edith W. Dunk, Robert C. Yates and Louise M. Yates, stockholders in the Detroit Novelty Machine Co., which was recently taken over by the Detroit Auto Vehicle Co., have brought suit against the latter concern to compel an accounting. The plaintiffs affirm that under the terms of the agreement the automobile company was to pay $2,500 for the novelty concern and was to issue $500 in stock to Robert Yates. Another allegation is that the purchasing company was to collect the outstanding accounts and issue stock to the stockholders of the Detroit Novelty Machine Co. for the amount collected, but have failed to say what money has been taken in and have refused to issue the stock. On these grounds an accounting is asked. The plaintiffs also allege that outstanding indebtedness to the amount of $10,572 was compromised for $7,000, and ask that they be paid the difference, claiming that they may be held liable.

Billings not to Build Cars.

The report that F. C. Billings, of the Billings & Spencer Co., Hartford, Conn., was concerned in the formation of a company to manufacture an automobile of his own design, is an overstatement of the case. He harbors no intentions of the sort. He did build a gasolene car for his own use, and its behavior has been such as to attract the attention of some men of means. They have coquetted with Mr. Billings, and he has not proven averse to the flirtation. If they desire to buy he is not disinclined to sell—and that is all there is to the story.

Queer Suit for False Arrest.

Charles S. Simanton, a jeweller of St. Johnsbury, Vt., thinks $10,000 the proper lotion for his injured feelings at being, it is alleged, arrested falsely, and has accordingly asked that amount in damages in a suit he has brought against Oscar Brambach, of Wshington, N. J. Some time ago Simanton purchased an automobile of George M. Depue, of Washington. The latter claims he had reason to think that Simanton was trying to leave the State without paying for the machine he had been operating for nearly a month. Depue then sold the machine to Oscar Brambach, and the new owner and Depue had an exciting chase at midnight after Simanton. The latter was arrested at Newton, and it was claimed by his pursuers that he was attempting to leave the State, having gone in the direction of the New York State line after leaving Hackettstown, where, it is said, he had agreed to leave the machine.

Philadelphia Dealers Join Hands.

Quite fittingly, brotherly love now pervades the automobile trade in Philadelphia. The lions and the lambs lay down together on Tuesday night last at a meeting in Hotel Hanover, when the Philadelphia Automobile Trades Association and the younger Philadelphia Automobile Association amalgamated under the former title. This gives the organization a membership of nineteen actives and five associates. All will now pitch into the promotion of the annual show. The officers of the older organization will hold over until the annual election on December 2.

Typewriter Concern may make Cars.

Manufacturers of many classes of machinery are casting an envious eye on the automobile as an adjunct to the profit producing capacity of their plants, some of them having already undertaken the building of cars. The latest rumor of this kind concerns the Smith Premier Typewriter Co., of Syracuse, New York, which, it is said, will add this feature to its business during the coming year.

New Men on Autocar.

Follolwing the resignation of John C. Spiers as general manager of the Autocar Co., Ardmore, Pa., John Calder has been appointed general engineer and A. L. Goddard superintendent of the company. Both were formerly connected with the Remington Arms Co., Ilion, N. Y. M. I. Brock, of course, remains sales manager of the Autocar Co.

Buffalo Fixes Show Dates.

March 4 to 10 is the date set for the fourth annual Buffalo show, if sanction, application for which has already been made, is granted to the Buffalo Automobile Trade Association. As usual, it will be held in Convention Hall, with David H. Lewis as manager.

Shawmut Succeeds Phelps.

The Shawmut Motor Co. has succeeded the Phelps Motor Car Co., Stoneham, Mass. Mr. Phelps had previously retired from the company that bore his name.

Autocar Sets its Prices.

The Autocar Co., Ardmore, Pa., has fixed $2,600 as the price of their 1906 24 horsepower touring car. The 12 horsepower runabout will list at $1,000.

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DO YOU SELL AUTOMOBILES?

Most discriminating drivers now use

THE FISK
MECHANICALLY FASTENED TIRES

but the man who has yet to try them will also appreciate your good judgment in equipping his car with them.

The sense of security and full comfort that users of Fisk Tires experience will go far towards making your selection of such an equipment a lasting advertisement.

The long service they render—the comfort they insure—and the amount of time, energy, and money they save make their use worth while.

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

NEW YORK, 754 Seventh Ave.
BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Bridge St.
PHILADELPHIA, 138 N. Broad St.
MINNEAPOLIS, 704 Henepin Ave.
ATLANTA, 103 N. Pryor St.
SYRACUSE, 423 S. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 318 Euclid Ave.
LOS AGELES, 1034 Main St.
DETROIT, 254 Jefferson Ave.
CHICAGO, 1251 Michigan Ave.
KANSAS CITY, 1330 Main St.
ST. LOUIS, 3908 Olive St.
SAN FRANCISCO, 114 Second Ave.

YOU CAN DEAL WITH US FROM A DISTANT POINT THE SAME AS AT THE FACTORY.

CADILLAC DEPENDABILITY

JOHN W. MOUNT & BRO.,
Manufacturers and Dealers,
CARRIAGES AND AUTOMOBILES.

RED BANK, N. J., November 13th, 1905.

THE CADILLAC MOTOR CAR CO., Detroit, Mich.

GENTLEMEN:—I think you are entitled to know of the good work the single cylinder touring car that I have been running this summer has done. It has never failed to take me wherever I have started to go, and have run it almost 3,000 miles since July. It always comes back stronger and seemingly with more power than when starting out.

One of the interesting runs I made was to Atlantic City, a distance of 106 miles from here. Made the run in 5 hours, each way, without having to make a stop for anything and the whole run of 212 miles on 10 gallons of gasoline and less than a cup of oil.

Another run from here to Trenton, 45 miles in two hours, speaks well for a car of this power.

These trips were made with four people in car, up and down hills and slacking up while going through towns.

I think there is more real pleasure and less trouble embodied in the little single cylinder touring car than any car built, regardless of cost.

This car that I have been running and described is only what all the other cars of this type we ave sold have done.

Wishing you all success, I am, yours respectfully,

(Signed) JOHN H. MOUNT, of the firm of J. W. MOUNT &BRO.

'NUF SAID.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers.

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NEW YORK, NOVEMBER 23, 1905.

Fewer Laws, More Light Needed.

In advance of definite knowledge of the provisions of the mysterious bill which President Morris states the Automobile Club of America will have introduced into the New York Legislature, comment may be unfair. But, generally speaking, it is regrettable that any effort to tilt at the legislative windmill is again to be made. It is very much like reopening an old sore, and it well may be doubted that any lasting good will result. When a wound is healing the best thing to do is to let it heal.

If the Automobile Club of America or any other club or organization desires to perform a public service which will redound to the safety of road travel of whatever sort, they should apply themselves to that legislation which makes for the universal use of lamps. It is legislation that is sorely needed and long overdue. Of course, the average man who uses the road will not welcome with open arms a law of the sort. Generally speaking, he is quite ready and even anxious that the "other fellow" shall display lights, but he himself dislikes to buy or to bother with them. This attitude does not, however, affect the merit of the law. There can be no two minds that the display of lights on each and every vehicle that uses the public roads makes for the safety of all who use them. It is a consideration really due from one man to the other, and if they will not realize it, they should be forced to do so.

The automobile interests can well afford to father such a measure and to earnestly advocate it. They already display lights, and in view of the hue and cry about making the roads safe from the "automobile peril," their advocacy of "uinversal lamps" will prove their sincerity in the matter, as it will serve to illuminate the insincerity of most of those who cry out for safety. It will throw the farmer element and most of the other elements on the defensive, and that is half the battle. It will also make easier any other purposes the automobilists would have served.

Concerning Chasses.

There will be seen at the shows during the coming winter a type of motor car chassis which, though not new, strictly speaking, will yet be for the first time sufficiently in evidence to be classified as a type by itself. This, for want of a better name, may be termed the commercial type of chassis, and though it may not become numerous before another year has rolled by, yet seems destined to become a very prevalent form of running gear sooner or later.

This type is being evolved in two distinct and different ways, each of which, independently of the other, is approaching the same result. It has all the general characteristics of the common and sometimes called "Continental" type, in so far as the wheel base, suspension and driving gear are concerned, and is not particularly to be distinguished from it as to the transmission and motor, except that they are placed considerably lower down than is common practice at present, and that the motor is located considerably further back from the front axle than at present.

In the field of the commercial vehicle, as designed for heavy duty, this type of chassis has been produced in an effort to secure as much space in the clear for the load as possible, as a result of which the driver's seat has been brought forward of the motor and placed above it. This has necessitated the lowering of the motor to a certain extent, and the rearrangement of the steering gear and control mechanism to correspond. Thus, though many of the commercial trucks and lorries seen at the present time still retain the motor in the position which touring car design has assigned to it, by far the greater number, following the example set by the early Panhard and Daimler vehicles, are of the type described.

On the other hand, the design of the pleasure type of vehicle has wrought out another type, from the pattern of the horse drawn cab and the electric cab, in which the driver is seated at the front of the car and directly over the motor, which is constructed after the fashion of the touring car and is precisely like it except that it is lowered in the frame, with consequent loss in road clearance in some cases. The development of this type of car for pleasure use within city limits, or, more properly speaking, for passenger commercial uses has then arrived at the same result, practically speaking, which has been attained by the builders of the heavy commercial car.

At the time of the shows last year several machines of the latter order were shown as the work of the foreign makers, and during the year others have been produced. The great demand for a machine which will not be a radical departure in appearance from the types of vehicle in common use on the streets, and one in which there will be ample and unrestricted room for the body, has called forth this type of chassis. Whether or not it is better suited to the needs of the case than any other remains to be seen; but at all events the fact remains that it combines the excellent qualities of compactness, serviceability and convenience of access (through the removal of the driver's seat) with that of beauty, since it removes from sight all mechanical parts except the mechanism of control, and on that account would seem to be worthy of a place in the consideration of the maker.

Influence of Four Cylinders.

But a year ago belief that the four cylinder vertical engine represented a type that would witness a number of years' evolution in other parts of the car before itself giving way to change or addition was so general that it would have been difficult to find a dissenting opinion. Not that experiment had not already outgrown four as a number to conjure with, for six cylinder cars had then been built and were no longer a novelty. Theory and practice are usually so far apart that it is seldom economy to attempt to make them approach too closely. Now, so far as theory is concerned, the ideal engine should be one with a sufficient number of cylinders to give the

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crank shaft turning impulses throughout its entire revolution.

Naturally this would mean duplication of parts to an extent entirely unwarranted by the result obtainable. Pioneer cars started with a single cylinder, but it was apparent at the outset that a single impulse every other revolution left the engine too long dead, or, rather, running on its acquired momentum for too great a time. The torque of such an engine cannot be otherwise than extremely irregular, particularly at low speeds, when the application of the load is apt to stop it. From this it was but a step to an additional cylinder, whether the resulting engine was placed horizontally with the cylinders opposed or vertically side by side, though the former was given preference for its balancing effect. But even two cylinders of a four-cycle motor mean but one impulse per revolution, and while this type of engine has held its own for low powered cars generally, it has not been found effective beyond a certain point.

Looking back on the last five years, it seems evident that much of the backwardness of the American builder was due to his blind faith in the single and two cylinder horizontal engine, while French designers would consider nothing less than four cylinders. It is not too much to say that it was not until the latter became a feature of the cars turned out on this side of the water that American cars generally began to be a credit to their creators. Since then the four cylinder vertical type of engine may well be said to have become universal for everything except light cars. Four cylinders of the four-cycle principle provide but two turning impulses per revolution, and thus still fall far short of the perfection represented by theory as already outlined. Nevertheless, they have been found to produce a very even torque, or pull, when run at comparatively high speeds, such as 1,000 r. p. m. or more, for which it has accordingly been found essential to design them. For every additional pair of cylinders it is possible to give the crank shaft an extra impulse per revolution. A thrust at every 120 degrees, or one-third of a turn, instead of 180 degrees, or every half turn, is the advantage represented by the six cylinder engine over its predecessor, and in the attempt to design a motor that shall have the maximum amount of flexibility is a considerable step forward.

What seemed a development of some uncertain time in the future has now come forth as a fact of the present, for at least one conspicuous American maker has announced a six cylinder car for 1906, several English firms have built cars of the same kind, and it is understood that some of them will make this type a feature of their regular line. More than this, one British builder will do likewise with an eight cylinder model, while six cylinder cars are expected to be prominent on the stands of the best known French builders at the Paris exhibition in December, so that for the time being at least it would appear that practice has made a step closer to theory by the addition of two cylinders. Whether this will be found to represent the point which economy makes it inexpedient to exceed, or whether still further additions to the number are necessary would appear to be in a fair way of solution during the coming year. Then there is, of course, the further possibility of a return to present standards as the result of experience with the new models during the same period.

Automobiles for Antarctic Exploration.

Pretty much everything else having been suggested as a certain means of reaching that spot on the earth's surface represented by the imaginary line known as 90 degrees north latitude—in other words, the North Pole—and many of them having been tried without success, an explorer has suggested the automobile, and to show the reasons for his faith in it has set before a scientific congress a carefully outlined plan for utilizing its services. He is M. Arctowski—whose name is not a joke—and he has intentions on the South Pole. It is his opinion that a specially constructed car fitted with spiked wheels and a few other usual accessories made necessary by the conditions to be encountered, would succeed in carrying an explorer further into the unknown frozen regions than any of the many methods hitherto employed.

All that part of it is merely detail, of course, and as technical information of the explorer's proposed car is not a matter of public knowledge at the moment, it is a waste of time to surmise what such a machine would be like, if ever it is built. But the fact of greatest interest conveyed by the announcement of the explorer's faith in the gasolene propelled machine to carry him into a region never before traversed by human agency lies in the tacit recognition of the capability of the automobile to overcome conditions hitherto found insurmountable by any other means. It shows that the automobile is already credited with having conquered all other things mundane in the way of transportation and is now seeking for new fields in which to display its ability to get there. It has shown itself to be the master of roads and the lack of them in every climate and in every portion of the globe; it roams the prairies, climbs the mountains, and has even conquered that waterless waste which has long been the terror of the Southwestern United States—Death Valley. The question no longer appears to be Where can the automobile go, nor Where cannot it go? for nothing short of a perpendicular wall seems sufficient to stop it.

Some one whose experience evidently has taught him a lesson advises the motorist to make it a practice always to write his name on the inside of outer covers of his tires and on inner tubes as well before sending them to be repaired. An indelible pencil is the proper things to mark them with, he says. Perhaps it was the same person who admonished the owner to be sure and borrow a set of batteries from the garage to which he had taken his own for recharging, and to insist upon retaining them until he had made sure that his own had not been tampered with during their sojourn there, and that they really had been charged according to instructions and not as a matter of fact simply been boosted up to show the required voltage on open circuit.

It was very nice of Highway Commissioner McClintock of Massachusetts to urge that the overspeeding automobilist be treated "squarely" and "like a man." But while there remains on the books of Massachusetts the law that permits the Highway Commissioner to revoke a citizen's right to use the public highway in a vehicle of his choosing and requires him to report the sale of his private property treatment of the sort is and will remain impossible. The Massachusetts law makes a privilege of an inherent and established right and presupposes that men who use motor vehicles are likely malefactors. They are by plain implication placed in the class with thugs, thieves and "fences."

Talk about reform! W. J. Morgan, who is to manage the Florida speed carnival, is objecting to cash prizes. Shades of Bill Tweed and Tammany Hall! Can this be truly the same Morgan who as a bicyclist barnstormed for cash practically all his life, and from one end of the world to the other? Can it be that he is managing the carnival for an "object de art," and not for the long sought, hard sought and much beloved and always sought "cash prize"? Won't some one please carry the news to Tom Eck and Jack Prince, and quickly?

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MADE MOTOR CARS IN CELLAR

Insurance Inquiry Finds Graft in the Mutual's Basement—The Official Explanation.

Since the spectacular withdrawal of the curtain which hitherto has concealed the innermost workings of the insurance industry in the United States, for it is deserving of no less a title, there have been many startling disclosures. The investor has learned with no little surprise, and not a few misgivings, that his good ducats have been put to many uses other than those for which he intended them when he subscribed them for the benefit of posterity, and he also has learned that the business of insurance is in reality but the credit department of a gigantic syndicate for the promotion of commercial and manufacturing interests of most extraordinary breadth and variety. So that really he need not feel the least concern at the announcement that the Mutual Life has been conducting an automobile department (unofficial, like many another of its ventures) in the basement of its headquarters at No. 32 Nassau street.

In the light of certain facts which have been laid before the investigating committee, it appears that no less than ten machines have been constructed in the sub-cellar shop, where are plenty of modern appliances and tools wielded by the hands of skilled mechanics who are on the payroll of the company. The work was carried on under the expert supervision of Edward M. Irton, the Mutual's superintendent of buildings in the city, who is of a mechanical turn. The cars, about which there is a dearth of particulars, were built for the superintendent and his friends, among whom are Lysander W. Lawrence, the head of a company which supplies the Mutual's stationary, and Vice-President Fonda of the Mutual. Mr. Lawrence's car, after having been constructed in sectional form, like the Pinnace described in the "Swiss Family Robinson," was taken to the Lawrence stable and there set up like a Chinese puzzle.

One of those human ferrets which the great dailies employ for the purpose of discovering things which are of interest to people who are not supposed to know them, sought out the Mutual Automobile Factory one day early last week and met with considerable opposition at first. In the end, however, he was directed to the "works" by an elevator boy, only to be stopped by a watchman, through whose kind offices he was ultimately ushered into the presence of Mr. Irton himself. After some little fencing that worthy admitted that he had constructed several machines, but said that all work on them had been done by the Mutual employes after hours, and that the Mutual had not been called upon to bear any of the expense.

"Mr. Fonda, third vice-president of the company, knows all about this matter," he said. "He has known all along that I was doing this work in the basement, and he has never offered any objection to it."

Mr. Fonda, when seen later, said he did not see why there should be so much talk over such a matter. He continued:

"Why shouldn't a man enjoy some relaxation from the cares of business by doing a little job in mechanics once in a while? If he has a talent for building automobiles let him amuse himself in that way. If Mr. Irton had done anything wrong, how long do you suppose he would have remained an employe of the company?"

Detectives sent out by the investigating committee report that the scene of Mr. Irton's recreation is located on the Cedar street side of the building, and is approached through a laberynth of passages which alone are calculated to confuse the stranger and throw him off the track, and that, in addition, the way is blocked at various points by watchmen in the employ of the company, who bar the way to all who are unknown to them. Once in the shop, however, they found the frames and motors of two automobiles, together with sufficient parts for their completion. Several mechanics were at work there. The investigators also reported that they saw the same mechanics go to the company's cashier for their money on pay day, and that their names were afterward found to be upon the pay roll.

Olds in the Correspondence School.

The Correspondence School of Automobile Engineering, which, according to reports, "struck oil" in Akron, Ohio, has been removed to New York, where it is expected the field will prove even more fertile. Incidental to the change of address, the school has been reorganized on a more substantial basis than ever, and now is incorporated under the laws of the State of New York, with a capital of $30,000. R. E. Olds has succeeded A. J. Saalfield as president; R. M. Owen has become treasurer, in place of E. R. Adam, and Robert H. Montgomery is secretary, instead of G S. Rowe. Victor Lougheed will continue as vice-president and general manager.

Grout Sues Inventor Radford.

Grout Bros.' Automobile Co., Orange, Mass., have placed attachments and begun suit against H. I. Radford, to recover $2,292 in an action of contract. Radford developed some ideas and theories on automobiles at the expense of Grout Brothers, who claim that he owes them for labor and materials.

Not in the Automobile Business.

The Lee & Porter Mfg. Co., Buchanan, Mich., write that the report that they purposed engaging in the manufacture of automobile parts was due to a misunderstanding. They have no present intentions of the sort, and instead will confine themselves wholly to the production of carriage and wagon axles.

The Moline Automobile Co., Moline, Ill., is building a quarter-mile circular test track, on which to try out its new cars. It is twenty-two feet wide and banked three feet on the turns.

"LARGE TIME" AT LANSING

Olds Agents Gather There and obtain Instruction, also Some Ruralistic Surprises.

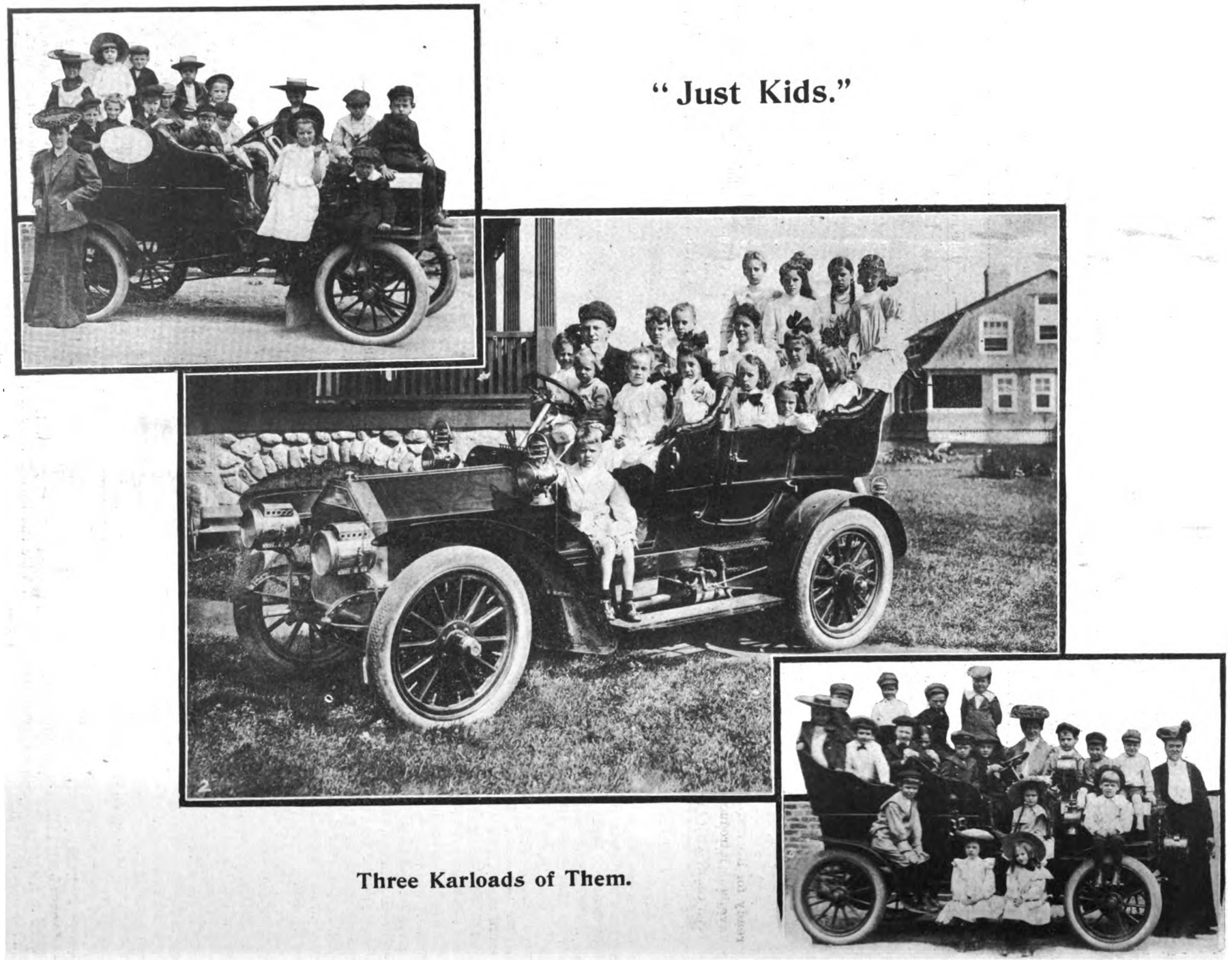
The Oldsmobile agents, more than a hundred of them, have left the factory at Lansing, Mich. If each of them did not learn all that is worth knowing about the new product, it is his own fault; if he fails to remember all of it and suffers from a confusion of memories, that is partly the fault of the Olds officials. They planned that their visitors should have reason to recall November 17 and 18, and they succeeded so admirably that the succession of events kept the minutes well crowded.

As they arrived, the agents from the different parts of the country were shown through the plant and the processes of manufacture explained. Then Chief Engineer Coffin took them in hand, and under his instructions the 1906 models were inspected and demonstrated. All the improvements and new features were pointed out and thoroughly explained. Thereafter the dealers had conferences with General Manager Smith and Sales Manager Chapin, and there is no doubt that the exchange of ideas and opinions will bear fruit.

Of the entertainment, the banquet on the night of the 17th, was the big feature. It was served in the largest room in the main factory, which had been cleared for the occasion. The decorations were in line with the "Country Circus" invitation that brought the agents to Lansing and carried some of them at least to their "boyhood days down on the farm." Hay and cornstalks hid the beams and the windows, while corn in the ear, hay, straw, pumpkins, squash and the like "set off" the big room, in one corner of which a stage had been set in a hay mow. "Jack o' lanterns" furnished the illumination, and during the dinner cackling chickens and a few bleating sheep made their appearance from nowhere in particular. A vaudeville troupe had been brought from Chicago to furnish divertisement. It was made up entirely of Nellies, Retas, Rosas and Claras. There was not a he on the programme. One of the troupe made her appearance on the stage in a redlighted Olds runabout and warbled parodies in which "Oldsmobile" figured largely. "In My Merry Oldsmobile," which rhymed with "fair Lucile," was her first number. "In the Shade of the Old Apple Tree," "My Irish Molly O," "Tammany" and "Goodbye, Little Girl, Goodbye," were each parodied for the occasion. There was a special menu card for each guest, each bearing a comic sketch to add interest. The banquet was a tremendous success. On Saturday the visitors and the factory staff, accompanied by a band, journied to Ann Arbor in a banner emblazoned special train of three cars; there they saw the crack University of Michigan football team wallop Wisconsin. They also saw collapse a grandstand containing several thousand spectators. This latter had not been arranged for their benefit.

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"Just Kids."



Three Karloads of Them.

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1000 Miles Inside of 24 hours, at Last, and by an American Car.



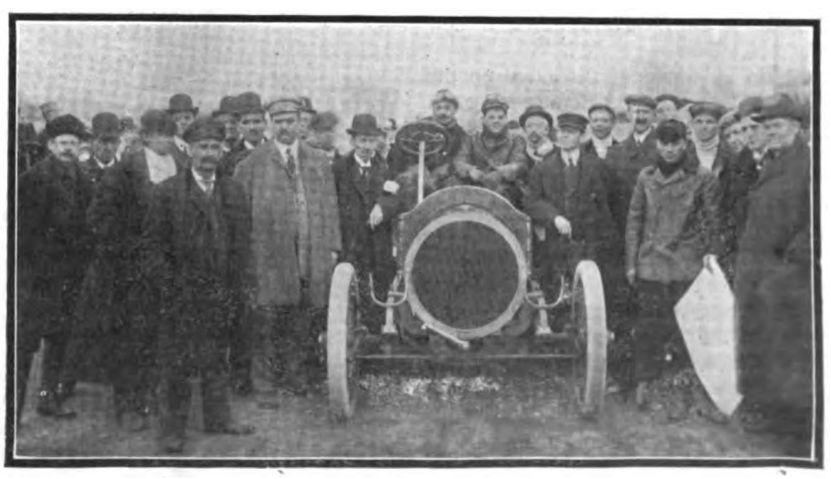
CLEMENS IN FULL CRY.

By circling the one-mile track at the fair grounds, Indianapolis, Ind., just 1,094 3-16 times between the hour of 2:45 p. m. Thursday, 16th inst., and the same time the following day, F. W. ("Jap") Clemens, assisted by C. C. Merz, succeeded in wiping from the slate all previous records for that time—twenty-four hours. To be exact, he beat the record made by Guy Vaughn in a foreign car on the Empire track, New York City, June 23, by 78 9-16 miles, and also reduced Vaughn's time for 1,000 miles 1 hour 35 minutes 19 1-5 seconds. Incidentally, he set up new figures from 650 to 1,000 miles. The significant feature of this performance that make "ducks and drakes" out of Vaughn's record is that Clemens drove an American car—a stripped stock National touring car. The event was formally sanctioned by the A. A. A.

Throughout the flight against time Clemens exhibited a measure of grit and pluck that stamps him as one of the most daring drivers in the country. The attempt began in the nature of a race. Two cars started, both 40 horsepower Nationals, Clemens at the wheel of one and Charles C. Merz, a seventeen-year old boy, on the other. They were the same cars and the same drivers that entered the 100-mile race on the same track on November 4, when Clemens set up new figures for the distance. On Thursday they were started one-half a minute apart, and ran very evenly until the first tire troubles of Merz's car caused him to lose several minutes. This happened before the fiftieth mile post. Clemens, after breaking all records from fifty miles, had one of his rear tires burst in the ninety-fourth mile, compelling a stop of 7 minutes 18 seconds. He was then 2 minutes 19 3-5 seconds inside his former record made in the 100 mile race of November 4.

Merz was about five miles behind Clemens at the 150th mile, when, on entering the stretch for the 151st mile, his car suddenly swerved and crashed into the fence. All the way up the stretch the judges and what few spectators there were could hear an unfamiliar bumpety-bump, but were unable to diagnose the cause or the reason for the sound; it was growing dark. All this time Clemens was endeavoring to keep his car right side up and regain the centre of the track, but after he had torn off enough pickets to build a summer house, plunged through. By the time the judges realized what was transpiring Clemens yelled, "All right!" When they reached the scene of the accident the plucky driver was still in the seat and holding fast to the steering wheel. The front wheels were smashed, the frame bent and the radiator ruined, but the driver received not a scratch.

Then the five-hundred Prest-O-Light lamps which had been strung around the track at intervals of twenty-five feet were turned on, and made an excellent substitute for daylight. It was then decided to put Clemens on Merz's car, as he had been reeling off miles in less time previously.



CLEMENS AND MERZ AFTER THE FINISH.

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Throughout the night the drivers were alternated, each doing between fifty and one hundred miles before changing. As the flight against time continued the surface of the track down near the pole was worn away and the bed of sharp gravel exposed. Naturally this proved destructive to the tires, and much time was lost throughout the night by frequent changes.

The drive throughout the night was one that will never be forgotten by Merz and Clemens or the judges and few spectators who stayed till the finish. The weather was bitter cold from 11 p. m. until 5 a. m., and the plucky drivers suffered in consequence. Icy blasts from the north wind caught the drivers at every turn and up the stretch. At times they were so numbed by the weather that when one was relieved he would have be carried into the judges' stand. On several occasions Clemens and Merz had to be rolled on the floor before they could regain control of their stiffened muscles. The greatest pain the men suffered was from cold to their eyes. During the first afternoon they were able to wear goggles over their eyes, but as the night wore on and the cold became more intense it was impossible for them to wear this facial protection, because the frost would freeze on the lenses and make it impossible to see the track. This was the most pronounced hardship they encountered during the entire run. When the race ended a large crowd was at the track to cheer the two men, and they were given a most royal ovation. The strain, however, on them had been almost unendurable, and it was several hours before they assumed normal life. Their eyes were swollen almost shut and were so bloodshot that the white around the balls was hardly visible.

At 1 o'clock Friday morning Clemens had succeeded in passing the 475 mile post. He was then reeling miles off in 1:04 or thereabouts. At 650 miles Clemens had regained the time lost when he plunged through the fence, and was then nearly 18 minutes ahead of Vaughn's record. From then on he and Merz steadily clipped seconds off each succeeding fifty miles, and at 1,000 miles the watches gave the time as 21 hours 58 minutes 4-5 seconds, beating the previous time of 23:33:20 by 1 hour 35 minutes 19 1-5 seconds. They continued at the wheel until the end of 24 hours, when the scorers announced a total mileage of 1,094 3-16 miles, a new world's record.

Had not the misfortune of tearing up the fence happened to Clemens, it is more than likely that new figures from 150 to 650 miles would have been established. At the 100-mile post Clemens had shattered his own figures of 1:53:21 4-5, and at 150 miles was thirteen minutes ahead of Guy Vaughn's mark. Then the accident occurred, and the drivers set to work to overcome the lapse of time. One peculiar coincidence of the accident was that in this race Clemens went through the fence, and in the previous 100-mile race Merz was the one to take the Oldfieldian plunge.

The average speed maintained during the twenty-four hours, including stops, was 45 7-12 miles per hour. The total time lost during that period for tire repairs, refilling oil, gasolene and water tanks was 2 hours 54 minutes 12 seconds, making the actual running time 21 hours 5 minutes 48 seconds. This shows an average speed while actually running of 51 9-10 miles per hour, no mean performance for an ordinary stock car.

The following summary shows how Clemens and Merz erased Vaughn's old figures:

Miles.	Former record.	Clemens's time.	Beat record by
150	3:05:38	2:52:32⅘	0:13:05⅕
650	14:26:47	14:08:51⅘	0:17:55⅘
700	15:53:35	15:10:29⅗	0:43:05⅗
750	17:27:10	16:20:25⅕	1:06:44⅘
800	18:52:44	17:17:26⅕	1:35:17⅘
850	20:06:46	18:23:44⅗	1:43:01⅗
900	21:21:57	19:44:48⅕	1:37:08⅘
950	22:33:16	20:54:50⅗	1:38:25⅗
1,000	23:33:20	21:58:00⅘	1:35:19⅕

Distance in twenty-four hours, 1,094 3-16 miles, breaking former record by 78 9-16 miles.

Club to Fight Toll Roads.

The Cincinnati Automobile Club is preparing to make war on the toll roads of Hamilton, Clermont, Kenton and Campbell counties in Ohio, and will send a delegation to the coming session of the legislature to demand favorable legislation. The complaint, which is not a new one by any means, is that the toll roads charge automobilists exorbitant rates for using the thoroughfares. Several turnpikes in Hamilton County have not yet been purchased by the County Commissioners, and one of these, against which complaint is made, is the Harrison turnpike. Another is the Milford turnpike, where tollgates are encountered after leaving Madisonville and before reaching Milford. Several automobile owners have already had disputes with the tollgate keepers on the Harrison pike.

The automobile owners claim the law provides that toll shall be collected on vehicles drawn by a horse or other animal; that this law was made long before the automobile was dreamed of, and that the automobile, not being drawn by any sort of an animal, does not come within the scope of the law, and consequently no tolls can be legally collected on an automobile. The toll owners contend that the automobile is a vehicle, and not being particularly prescribed in the law, the toll people can make any schedule of rates for automobiles they please. The Alexandria pike owners, in Kentucky, announced that they did not want the automobile on their pike at all, because the pike is travelled extensively by women, whose horses got frightened at the automobiles.

They, therefore, charged an exorbitant price for the automobiles, and it formerly cost $5 in toll to go from Cincinnati to Alexandria and return. An over-the-river automobilist paid this price, took a receipt and sued the turnpike owners. He won in the courts and the price was reduced, so that now an automobile trip can be made to Alexandria and return for 85 cents. The scale of prices for automobiles was one cent for each horsepower a mile, or, in other words, a 20 horsepower automobile was assesed 20 cents a mile. The automobile owners assert that the Harrison pike people are almost as extortionate in their demands.

Rockford's Climb on the "French Plan."

Rockford's (Ill.) first hill climbing contest, promoted by local automobilists and held on Corey's Bluff, 10th inst., was a decided success despite that most of the participating machines were small stock cars. About two hundred spectators were attracted to the course, and those who were not fortunate enough to possess motor cars were compelled to walk over a mile to the bluff.

Havens, driving a 22 horsepower Buick, made the best time of the day, 0:25½, from a flying start, and a 16 horsepower Knox, driven by Cutler, made the next best percentage, although it did not climb the hill in the second fastest time. The committee figured out the awards by a French system, and after working three days finally made up the summary.

From a standing start Vernon Cole, in the "Scared Rabbit," whatever family that belongs to, made the best time, 0:45 1-5, but the judges figured its percentage at .417. The air cooled Knox, which made the ascent in 0:50 4-5, won with .353 per cent.

The scores of the competing cars in the climb follows:

FLYING START.

Car and driver.	Weight.	Time.	P. C.
Buick, 22 h. p., Havens	2,075	0:25½	.270
"Scared Rabbit," 12 h.p., Cole.	1,300	0:31	.2784
Franklin, 10 h. p., Hutchins..	1,200	0:33⅘	.281
Knox, 16 h. p., Cutler	2,300	0:40	.2780
Rambler, 18 h. p., Henry	2,200	0:41⅘	.434
Glide, 16 h. p., Dunn	—	1:05	—
Rambler, 8 h. p., Carpenter..	1,575	1:05⅘	.354
Premier, 16 h. p., Rogers....	2,200	1:10	.563

STANDING START.

"Scared Rabbit," 12 h.p., Cole.	1.300	0:45⅕	.417
Buick, 22 h. p., Havens	2,075	0:45⅘	.485
Franklin, 10 h. p., Hutchins.	1,200	0:50	.416
Knox, 16 h. p., Cutler	2,300	0:50⅘	.353

Bertrand Fails to Break Record.

Clovis Bertrand did not break the speed laws of as many States as he anticipated. He set out last Friday, 10th inst., to set up a record for the run from Chicago to New York, but was forced to abandon the attempt just before reaching Cleveland because of slippery roads. Bertrand reached Toledo, 276 miles from Chicago, at 1:05 o'clock that afternoon, having maintained a speed of thirty miles an hour up to that point. In the run from Toledo to Cleveland he encountered slippery roads, and realizing the futility of continuing, he left the car in a barn near Cleveland and disgustedly took a train back to the Windy City. The run, while it lasted, was made in a French car and under the "auspices" of the New York importer who handles it. The record still stands to the credit of an American car, the Columbia.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau Street, New York.

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MYSTERIOUS LAW FRAMED

Morris Signalizes His Re-election by Hinting at it, also Suggests A. C. A. Branches.

Speaking through its newly re-elected president, Dave Hennen Morris, the Automobile Club of America has placed itself on record as being desirous of bringing about a change in the existing New York legislation, which it so strenuously battled to save from outside molestation last spring. For the present, however, the proposed law is a deep, dark, State secret. The news came out at the annual meeting of the club, which took place on Monday last, the 20th inst.

Only one ticket was presented. President Morris was re-elected, and the other officers chosen were: Vice-presidents, Colgate Hoyt, Frederick G. Bourne and General George Moore Smith; treasurer, W. S. Fanshawe; governors (to serve three years), Colonel John Jacob Astor, George F. Chamberlin and Schuyler Skaats Wheeler; governor (to serve two years), William Pierson Hamilton; governor (to serve one year), John E. Borne.

In explanation of his announcement that the club is now having drafted a new automobile law which it will endeavor to have passed at the approaching session of the legislature, Mr. Morris spoke of the attitude of the club last year when it resisted attempts to change the existing law by amendments, preferring to give that law an opportunity to demonstrate its fitness or the contrary.

"But circumstances have now led the committee to believe that a new law should be enacted," he explained further, "and a bill is being drafted which, it is believed, will be rational and fair to all. The bill is based upon a totally new theory from any automobile law now in existence, its purpose being to act as a more efficient control on the reckless driver and yet allow greater freedom to the prudent driver."

Among other suggestions contained in the annual report, one advising the establishment of branch club stations in various parts of the city, proved a great surprise to the members. The plan is entirely new and is advocated on the ground that the capacity of the new clubhouse in Fifty-fourth street, which is not expected to be ready for occupancy before next summer, is far short of the number of cars owned by resident members. The number of the latter has now reached 899, which led to the suggestion that the active membership limit be increased to one thousand. The creation of a new department of the club, to be known as the touring department, which should be in charge of a man conversant with routes, maps, hotels, customs regulations and similar information that is constantly inquired for by intending tourists, was also advocated and the fact made known that a new agreement with the German Automobile Club is under negotiation, the purpose of which is to give American automobilists touring and custom house benefits in Germany. In closing Mr. Morris called attention to the prevalence of bad smelling and smoky exhausts on cars in this city—a matter usually due to ignorance or carelessness, and which should be prevented as far as possible as is done in Continental cities, particularly Paris.

When seen at his office the next day by a Motor World representative in quest of more definite information regarding the law which the club will attempt to have passed, President Morris wished to be excused.

"At the present moment," he said, "I am not at liberty to say anything about it; otherwise I would have made my previous reference to it more definite. The bill has been drafted by a committee appointed by the club and before being made public it is to be submitted to other associations."

"What other clubs or associations besides the Automobile Club is interested in the measure?" was asked.

"That I can't tell you either."

"Well, then, to approach the subject from the other end, What are your objections to the law as it now stands?"

"In the first place," was the reply, "it converts into a crime an act which is not one of intention. If a man exceeds the law by driving a fraction of a mile over the legal limit, he is guilty of a crime. The law is based on a technicality. Then the punishment provided for is inadequate on the one hand and too severe on the other. What is a fine? Aside from the law itself, I think this entire system of hauling a man before a city magistrate or a justice of the peace is all wrong."

"But, is it not your opinion that the highway laws of the State are sufficient to cover all cases that may arise without the existence of a specific statute to cover the automobile?" was asked.

"No, it is not; I think a specific law is necessary."

"What are the chief features of the national law, the necessity of which you have also referred to?"

"I cannot give you that at the present time either. Of course, Congress has no power to legislate over any State roads except those on which the mails are carried—post roads. The bill we have in mind would not supersede any State legislation, but is intended rather as a guide for the states in legislating on the subject. Further than that I am not at liberty to give you any details of either of the bills, which I think will be made public in the course of a fortnight or so."

Sumter forms a Club.

Sixty-four automobilists of Sumter, S. C., have organized as the Sumter Motor Club. The officers elected were: President, Dr. J. A. Mood; vice-president, Dr. Walter Cheyne; secretary-treasurer, H. Harby.

FAILED TO "STUMP" THEM

Hill was a "Teaser" but All Reached the Top — Steamer Makes Fastest Ascent.

Good weather, large crowds, perfect arrangements and fast time combined to make the annual hill climbing contest of the Rhode Island Automobile Club, held at Pawtucket, last Saturday afternoon, 18th inst., a thorough success, and although the hill was an "axle breaker" no serious accidents occurred to mar the affair.

The climb was held on Stump Hill, just out of Pawtucket. Starting from Smithfield avenue, for about six hundred feet, the road has a grade of about 2.54 feet per hundred, with a sharp turn at the summit. This slight incline did not prevent a good start and enabled the contesting cars to get away in good fashion before striking the heavy grade of 11.47 feet, which runs along for six hundred feet more. At the top of this sharp rise the ascent diminishes slightly, going up to the reservoir on a grade of seven feet per hundred. At the top is another sharp turn on the level, where the road turns off for the descent. The distance from the start was exactly one-half a mile and five "thank-ye-ma'ms," and the sharp curve, too, at the summit, added to the hazardous nature of taking the incline on the high.

There were thirteen cars entered, all belonging to club members, and the hoodoo which is supposed to go with thirteen "went" in this case. Just before the races started John I. Snow, who had entered a Peerless touring car, was trying it out on the hill. He struck one of the depressions on the road and the rear axle cracked. Earlier in the day Herman Waterhouse, in a Pope-Toledo, broke a crank shaft in the same manner.

The first car to essay the climb was a Stanley steamer, driven by F. N. Baldwin. He was the winner of this class and also in the free-for-all, winning the Knight trophy, his time being 55 3-5 seconds. B. F. Blackinton, also in a Stanley, made the ascent in 0:65 3-5.

There were three starters in the second class, for stock gasolene runabouts, and George Chapin, in a Knox, went up in 1:43. E. Dauer, in a 10 horsepower Franklin, finished ten seconds behind the winner. Two 20 horsepower Stevens-Duryea cars fought for honors in the class for cars costing less than $2,800. The one driven by Robert Winsor took the hill in 1:20 2-5, while C. D. Snow's followed in 1:25.

The heavy cars appeared in the last event, for touring cars costing more than $2,800. A. C. Lee, driving a 30 horsepower Pope-Toledo, covered the distance in 1:08 4-5, and another car of the same make and power, with J. K. Crawford, did it in just one second more. This caused the first real thrill of excitement, and in fact the only one of the af-

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"When the Leaves Have Turned to Umber."



"MY LADY" IN AN AUTUMNAL SETTING.

ternoon. C. E. Stafford's 28 horsepower Packard finished third in 1:12 3-5. Following is the summary:

For Stock Steam Cars.

L. F. N. Baldwin, 10 h. p. Stanley....0:55 3-5
B. F. Blackinton, 10 h. p. Stanley....0:65 3-5

For Gasolene Stock Runabouts.

George Chapin, 8 h. p. Knox.....1:43
E. Dauer, 10 h. p. Franklin.....1:53
W. H. Capron, Jr., 10 h. p. Franklin..1:54 3-5

For Gasolene Stock Cars Costing Between $1,600 and $2,800.

Robert Winsor, 20 h. p. Stevens-Duryea 1:20 2-5
C. D. Snow, 20 h. p. Stevens-Duryea..1:25

For Gasolene Stock Cars Costing Over $2,800.

A. C. Lee, 30 h. p. Pope-Toledo.....1:08 4-5
J. K. Crawford, 30 h. p. Pope-Toledo.1:09 4-5
C. E. Stafford, 28 h. p. Packard.....1:12 3-5
F. Blanchard, 40 h. p. Winton.....1:14 1-5
C. Montgomery, 40 h. p. Thomas.....1:25

Denver Wants Lamps and Lots of 'Em.

Lamps to the front of them, lamps to the right of them, lamps to the left of them, lamps to the rear of them, red lamps, white lamps and all kinds of lamps—this is the lampoon that has been launched against the owners of automobiles in the city and county of Denver, Col., by Supervisor Webb.

His bill provides that every person owning an automobile must carry an identification card, a license number, a horn, the lamps and—a few other things. There must be two lamps in front of the machine, lamps on the side, one or more red danger lamps in the rear and a white lamp placed over the number of the machine in the rear, that will throw a strong light on the aforesaid number and enable constables to distinguish numbers at night.

Quite naturally, the Automobile Club of Colorado intends to fight against the passage of the measure. The one redeeming feature of the measure is that clause which makes it a misdemeanor punishable by a fine of from $1 to $100, for any person caught puncturing the tires of any other person's car or in any way meddling with a car that does not belong to him. This clause is aimed at small boys, who have a habit of tinkering with machines when left standing on the street.

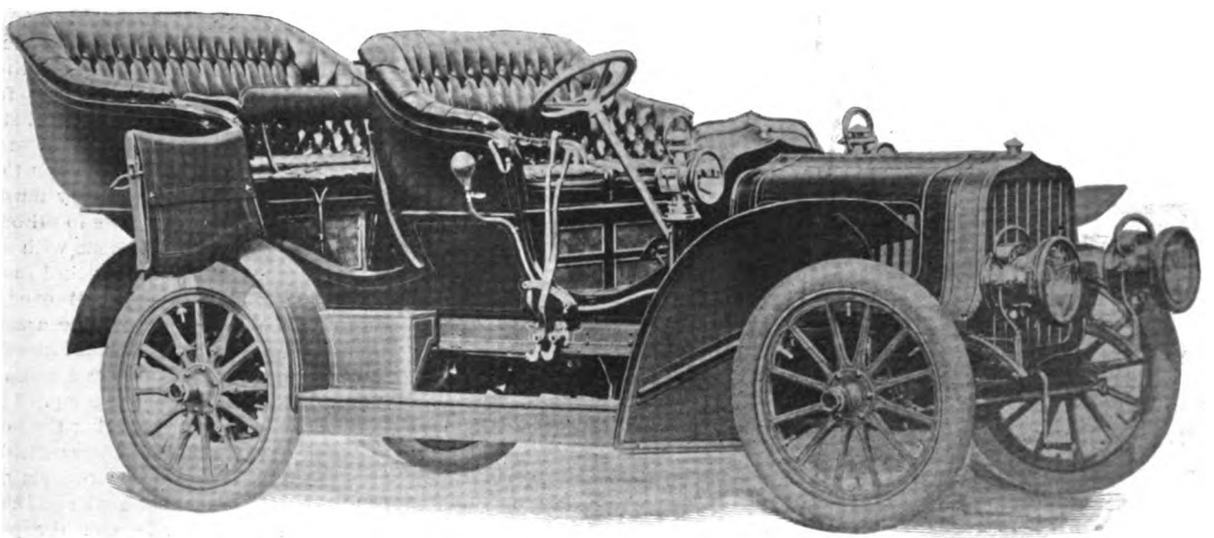
Battle Heads Seattle Club.

At the annual meeting of the Automobile Club of Seattle, Wash., the following officers were elected: President, Alfred Battle; vice-president, Alfred Latimer; secretary-treasurer, F. R. Seymour; directors, the officers, A. S. Kerry and Walter S. Foster. A new committee, to look after the city streets, was created. The most important announcement was that the club had procured one thousand signboards to be erected throughout the State.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau street, New York. •••

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Points of the New Pope-Toledo.



In the 1906 Pope-Toledo, which is nearly ready for the market, several novel features have been introduced, all of which make for greater excellence in the car without destroying the distinctiveness which has characterized the product in the past. Thus, an improved grade of steel has been produced, which, in conjunction with a more liberal use of aluminum in parts which are not subject to excessive strains, makes it possible to reduce the total weight of the machine without sacrificing anything in resisting power against shocks and undue loads. By this means, the remarkable ratio of one horse power for every fifty-four pounds weight in the car has been secured, while in the motor the ratio of weight to power is 1 to 8.8. The machine thus is distinguishable as the lightest for its power ever built for touring purposes.

The steel which is used in the construction of the engine and transmission parts, and in the axles as well, is the nickel chrome metal which combines with great strength the essential of elasticity such as is not commonly found in the harder metals. That which is used in the mechanical parts has an ultimate tensile strength of 225,000 pounds per square inch, while that used in the axles, requiring slightly different qualifications, gives an ultimate test of 110,000 pounds on the standard section.

In the motor a novel feature, and one entirely new in motor car design, will be the use of twin cylinder head construction. The cylinder heads will be cast separately from the cylinders, as heretofore, but instead of each being made a separate casting, the heads will be paired off, a bridge thus being formed between each pair of cylinders, which will serve as a brace to prevent distortion. The construction of the independent copper water jackets will be substantially the same as in previous models, except that the triple beading in the jacket which has up to this time been provided to allow for expansion will be done away with, the exterior of the jacket being perfectly smooth. Automatic inlet valves will be used as formerly, but the position of the exhaust valves will be altered so that tappet rod and walking beam mechanism will be used to actuate them instead of direct cam lifts. Although the jump spark ignition will still be retained, a special gear will be placed on the crank shaft which may be used to drive a magneto, at the option of the purchaser, a suitable bracket being arranged on the engine base to provide a support for this auxilliary. All the engine gears will be enclosed.

In the method of supplying the fuel a change will be made, the exhaust check valve being eliminated, and instead a hand operated force pump being used to lift the fuel from the main tank at the rear of the chassis to a 4½-gallon supplementary tank mounted on the dash, from which the feed to the carburetter will be maintained by gravity.

The general construction of the frame will be retained in its present form, a slight alteration being made in the forward section, in which the reverse curve at present used to narrow down that part which supports the engine will be replaced by a straight taper. The brakes will all be located on the rear wheels, a double set of drums being used, one for the running brakes, and the other for emergency application. Both sets will be double acting and of the internal expanding ring type.

The mechanism of control will be unchanged except that a larger steering wheel will be used than in this year's models. A larger tonneau will be provided in the standard type of body, giving ample room for the use of an emergency "jump" seat for two persons, which when not in use folds away at the front of the rear footboard, leaving that space unhampered in any way. The body work will largely be of Circassian walnut, while the fenders, dash trimmings, hub caps and hood will be of aluminum.

The present desideratum of flexible control has been amply looked after, as is shown by the fact that the test car recently made a run over a measured course at the rate of 5¼ miles an hour, and later another of the same distance at the rate of 68 miles an hour, all on the high gear, while the machine carried a load of six passengers.

Here's the Pneumatic Cap.

Probably the most bizarre accessory placed on the market for the automobile driver consists of a "pneumatic cap," a title sufficiently suggestive of the purpose to which it it to be put. The crown is fitted with several hollow rubber balls adapted to be inflated, and is finished with a rubber band to grip the head. If the chauffeur will consent to wear one of these caps and will obligingly see to it that when he is forcibly hurled from the car that he lights squarely on his cranium, the makers will guarantee that instead of the usual unpleasant thud, he will rebound and gracefully alight on his feet—in other words, he will be charmed with the result.

Features of Olds's Two-Cycle Car.

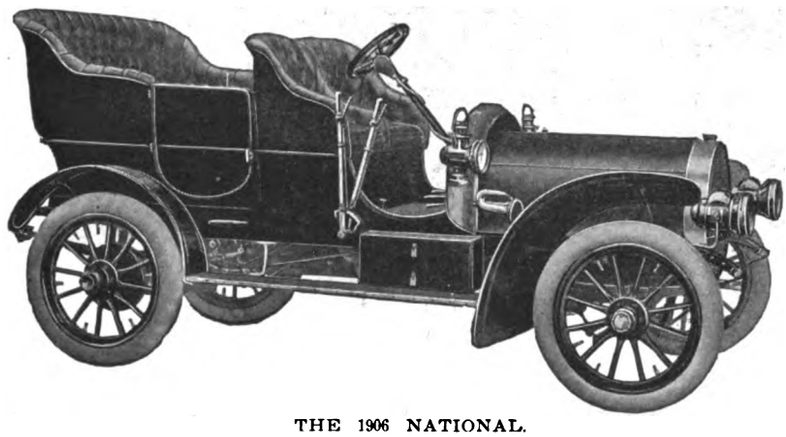
The two-cylinder, two-cycle Oldsmobile, the announcement of which proved so surprising, will be rated at 20 horsepower. The engine dimensions are 5x5 inches; the cranks are set at 180 degrees and counterweighted. Bevel gear drive is employed. The wheel base is 102 inches.

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Features of the New National.

In the new National car, which lately has been "doing things" in impressive fashion, the more salient features which serve to distinguish it from former cars of the "round radiator" brand are an increase in horse power, a longer wheel base and the adoption of the Hess-Bright type of ball bearing throughout.

The cylinder dimensions of the new type are 4½ by 5 inches, an increase of a quarter of an inch in the bore over the last year's



THE 1906 NATIONAL.

model, which allows for an increase in the rated power from 25-30 to 35-40, though the new motor actually delivers from 42 to 44 horse power on the testing block. This gives a weight ratio of something like one horse power to ten pounds of motor weight, which is well up in the range of good practice.

Pressed steel frame construction is again used, with a sub-frame for the mounting of the power plant, the latter arrangement allowing for a better alignment of the motor with the rear axle than otherwise would be possible. The wheel base is now 104 inches, as against 96 in the last type of car, the standard tread being retained. The control, including the feature of duplicate drag links in the steering gear, is essentially the same as in last year's machine.

An all aluminum body is used, carrying five passengers. In general, the machine is notable for its compact arrangement of parts and the uniformly rational design which is manifest in every detail. This is seen at once in the housing of all moving parts as a protection against dirt and exterior shock; in the triple ignition system, ignition being obtainable from either primary cells, accumulators or dynamo; and in the location of the oil reservoir at the top of the motor, where it is subjected to a gentle heat at all times, thus preventing the oil from congealing and effecting a considerably economy in space.

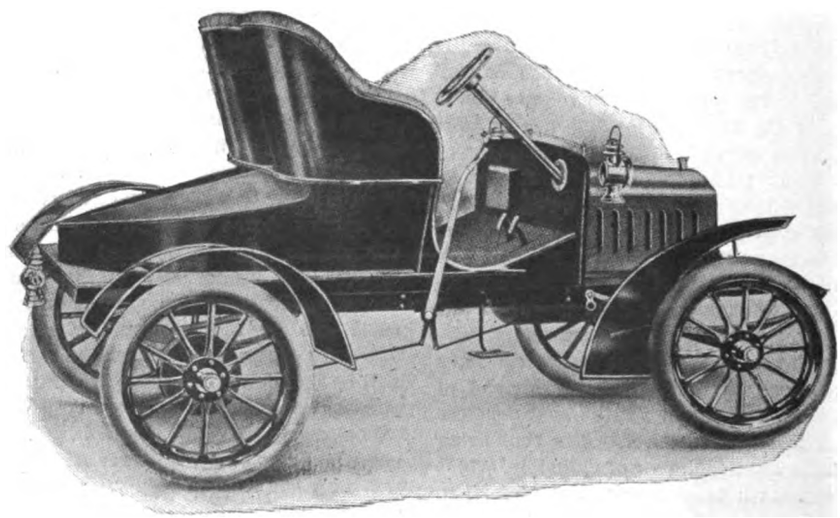
It is announced also that in addition to the regular stock model here outlined, the National people will soon present a six cylinder machine, running on 121-inch wheel base and capable of carrying seven passengers. This car, which will appear at show time, will be nothing more nor less than a "big brother" of the present types, embodying all the new features of the regular 1906 machine, with may be a few others in addition.

Converting the Old Car.

The mechanical work necessary to convert one of the old style rear entrance cars into an up to date side entrance model by lengthening the frame has already been dwelt upon. This change will modernize the car's appearance, but will not help it in any other way, so that it is as well to take the "up to date" recommendation with some reservation—in fact, unless the car already has ample power and is in good condition it would not be a paying investment to put it through the transition process. There are many such cars, but there are likewise hundreds of cars the only out of date features of which are their rear entrance and short wheel base. Many of them are now coming into the repair man's hands for conversion, and in view of this the Carriage Monthly outlines the work necessary for completing the job—that is, rendering it ornamental after the new construction is in place. It is something that can be accomplished at slight expense.

"In a car recently modified in this manner," it says, "the tufting and pleating was in diamonds, the trimming on the back door was made up the same as the backs, which ran around the sides to within twelve inches of the front. In this space a large pocket with a flap was placed. In altering this car it was necessary to loosen the trimming. It was removed from the back door, the back was knocked loose on the door post on each side and around the top sufficiently to give the woodworker a chance to put in bolts. It was also loosed on the sides to prived for the width of the new doors. Taking the pockets from the sides was found necessary, and this was done carefully so that they could be used again. When ready for trimming the back door piece is replaced, strips of wood being placed across the bottom and up the sides of the door posts. Upon these the door pieces are tacked, and they must be brought out flush with the backs to fill out the hollow of the door, which is done with moss.

"Next the backs are tacked fast to the door post, bringing them well over toward the door pieces. There will be a space of about half an inch from the seat almost to the top. In this space tack a piece of flat lace of the same material as on the top. The pleats can be spread a little, making the door piece and back look like one. After tacking this fast the back is bound, the pockets are placed on the side doors and the doors should be blocked to the shape of the pocket. After the blocks are set in the doors for the pockets the doors are covered with wadding for padding. Then the material is tacked around the edge of the doors and finished with a cord and lace. The pocket is blind tacked on the bottom. Gimp is tacked on the side and the flap is tacked under the lace on top of the door. This pocket has a buckle which takes a strap on the flap, and, being of good size, it looks well. The back and doors are now done. It is necessary to make a small cushion to fit well between the two old ones. It is given a spring frame of the right size and must be made to match the old one, a snug fit being necessary. A binding is made and tacked on around the edge of the seat, and a box is made under it by running a board across underneath about one inch back from the edge. This panel or front of the box and its lid are covered with the same material and the same lining. Where the old trimming can be employed, the alterations will not involve any great expense, as the only new material needed is that for the small cushion and the lining of the door. Nor is any great amount of time consumed in making the change."



THE FORD FOUR CYLINDER $450 RUNABOUT.

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CONCERNING THE CHAUFFEURS

How they may be Classified—One Man's Definition of the Desirable Sort.

Somewhat akin to the servant girl problem appears to be the situation at present extant in automobiling circles, so far as it refers to the chauffeur. A comparatively few really competent men, a number who are not totally incompetent by any means, but who are far from ranking in the first class, and a mass of incompetent, inexperienced and generally ignorant individuals, would appear to sum up the personnel of the large body of men who are at present attempting to gain a livelihood through serving as drivers of automobiles.

The first named are naturally seldom in search of work; they hold the same position year in and year out, and are considered a valuable acquisition by their employers. There is an ever shifting movement of the second class, brought about by their incompetence, coupled with a desire for higher compensation, regardless of ability—a condition of affairs that is made possible by the fact that the number of men possessed of this moderate measure of skill is so far below the demand that exists for chauffeurs.

As for the third class, which corresponds with the "just landed" immigrant, who despite her ignorance will accept nothing less than the highest current wages, they are practially legion—every man who has completed a six weeks' course by correspondence or who has been allowed to run a car at one time or another is a chauffeur.

"Any one who is disgusted with his old business or who wants to try something new has an idea that running an automobile is an easy and profitable job," is the manner in which an automobilist of long standing sums up the situation as regards the general mass of wofully incompetent individuals who are constantly shifting from one place to another to the ruination of many a good car, as well as its owner's temper and fund of patience. "But no good chauffeur need be in fear of his job for the next twenty years,' is the opinion of the same authority; "for the demand now cannot be supplied, and a balance will not be struck for a long time."

"The good, reliable cheauffeur is one who can drive any car, and drive it well; who has no accidents, who is quick to act in an emergency and who always has his car ready. That is requiring a great deal, and it would be difficult for me to mention ten or twelve men in New York City who can fill these qualifications. These may be called bright, exceptional cases, but there is no reason why there should not be hundreds of others like them. Common sense and a comparatively small amount of mechanical knowledge are all that is required to be a good chauffeur. Comparatively few things happen to a good car, and these things are repeated in all of the best makes. If a chauffeur understands what causes these troubles and knows instantly how to remedy them, he must have a pretty thorough knowledge of the complete mechanism and can be trusted to tackle some unusual difficulty when it breaks out."

It is a somewhat anomalous state of affairs on the surface, but if looked into reveals all the earmarks of situations that have at one time or another confronted every industry requiring skilled labor and that has made strides forward out of all proportion to the increase in the supply of help. It is something that cannot be remedied in a day, but will gradually correct itself through the influence of education and the gradual weeding out of the totally unfit. As prospects are at present, however, it would seem to be a matter of a number of years before conditions will be such that even the poorest chauffeur should go begging for work.

"Selling Promenade" of Second-Hands.

Having proved so successful last year, the Automobile Club of Toulon, France, will repeat its "selling plater" race of last year. All who are desirous of disposing of a car, regardless of its age, sex, color or previous condition of servitude, may enter it in this tournament for a nominal fee. There will be no classification. The event simply consists of a public exhibition of the competitors for the benefit of intending purchasers. The cars will then be put through a "promenade" of twenty-five miles. Naturally, no attempt at record breaking will be made, but the time of all competitors will be taken at various points, although the ability to survive the ordeal will probably constitute the best recommendation.

Binghamton Chauffeurs Organize.

To "promote social interest and to increase and to ameliorate the ideas pertaining to automobile work," the Binghamton (N. Y.) Chauffeurs' Club has been formed. Organization was effected last week by the election of the following officers: President, Charles Hancock; vice-president, Charles Leonard; treasurer, Ward Decker; secretary, Philip F. Barrows; committee on ways and means, F. E. Spawn, Claude Darling and Ray Perry.

Chicago Prepares to Build.

A new clubhouse for the Chicago Automobile Club, to cost between $750,000 and $1,000,000, has been decided upon by the directors of the organization. At the meeting a committee was appointed to select a site. A feature of the new clubhouse will be a number of bachelor apartments. The garage, which will be equipped to accommodate three hundred cars, will be situated in the rear.

Failed to Prove the Negligence.

William A. Figie, a Syracuse man who wanted a few hundred dollars at the expense of the Amos-Pierce Automobile Co., of that city, is a sadder but wiser man. Figie brought suit against the Amos-Pierce Co., claiming that a car of the defendant company, while being operated in a negligent manner, ran into his horse and wagon. Judge P. J. Ryan granted a non-suit.

TAME SPORT AT KANSAS CITY

Runaways the Rule, even Mrs. Roddy Unkindly leaving Mrs. Blakely Far Behind.

Runaways galore constituted the sole feature of the race meet held by the Kansas City (Mo.) Automobile Club at the Elm Ridge track, that city, Saturday afternoon, 11th inst., unless a race for ladies can be included in the category. Over thirty-five hundred had gathered at the mile track expecting to see some real sport, but in this they must have been sorely disappointed, for with the exception of one race, at three miles for light touring cars, in which the second car to cross the tape was only two seconds behind the winner, the meet had the semblance of an endless procession around the oval.

Four runabouts breasted the tape for the first event, at two miles, and Charles Levendoski's Cadillac had little opposition, finishing fully eight seconds in front of the Ford, driven by H. G. Blakeley. Not content with winning this event, Levendoski entered the three-mile event for cars costing under $1,750, and beat another Ford by the narrow margin of two seconds. This was the so-called real finish on the afternoon. Moriarity & Co.'s 20 horsepower Stevens-Duryea carried off the prizes in the next two events.

H. A. Fowler, driving a 28 horsepower Packard, won the five-mile free for all in 6:43. At first this event looked like a race until the Buick went wrong, when the Packard had little difficulty in blazing the way for the Stevens-Duryea. Mrs. John J. Roddy, in a 24 horsepower Winton, drew the pole in the ladies' race and swung into the lead at the start. She easily won from Mrs. H. G. Blakeley, in a Ford. The time was 3:43. Philip Otto finished first in the obstacle race, with Frank Dean second. Summaries:

Two miles, for stock runabouts—Charles Levendoski, 8 h. p. Cadillac, first; H. G. Blakeley, 8 h. p. Ford, second; Ed. Steurwald, 8 h. p. Oldsmobile, third. Times, 4:07, 4:15, 4:29.

Three miles, for cars costing less than $1,750—Charles Levendoski, 8 h. p. Cadillac, first; Emil Dorn, 8 h. p. Ford, second; W. G. Guombo, Stevens-Duryea, third. Times, 6:12 6:14.

Five miles, for cars costing less than $2,800—Moriaty & Co., 20 h. p. Stevens-Duryea, first; D. C. B. Co., 16 h. p. Rambler, second. Time by miles, 1:34, 2:57, 4:17, 5:40, 7:01.

Three miles, novelty—Moriarity & Co., 20 h. p. Stevens-Duryea, first; H. A. Fowler, 28 h. p. Packard, second; Charles Stephens, 22 h. p. Buick, third. Time by miles, 1:45, 3:45, 5:32.

Five miles, free-for-all—H. A. Fowler, 28 h. p. Packard, first; Moriarity & Co., 20 h. p. Stevens-Duryea, second; F. E. Grant, Thomas, third. Times by miles, 1:28, 2:47, 4:05, 5:22, 6:43.

Two miles, for ladies—Mrs. John J. Roddy (Winton), first; Mrs. H. G. Blakeley (Ford), second. Time by miles, 1:56, 3:43.

Obstacle race—Philip Otto, Packard, first; Frank Dean, Stevens-Duryea, second.

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Autumn in the Orange Mountains.



ONE OF THE COUNTRY ESTATES NEAR BERNARDSVILLE, N. J.



A CHARMING WOODLAND SCENE IN THE HEART OF THE ORANGES.

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THE PROPER SIZES OF TIRES

Weight of Car not the Sole Consideration—Other Factors That Have a Bearing.

The matter of tire sizes and weights, which has proven such a bone of contention in this country, is evidently cropping up on "the other side." It has led one of the British tire manufacturers, David Moseley & Sons, of Manchester, to go rather interestingly into the subject, and to point out that weight is not the sole factor to be considered in determining the tire sizes. The volume of compressed fluid air within the tire, the nature and construction of the tire cover, the speed of the car, the heat generated within the tire, and the attachment of the tire to the rim are enumerated as having to do with the case.

They present the following table giving the approximate English inch measurement of the French sizes of tires, the approximate cubic inches of compressed fluid air which the tires contain, and the weight per wheel and weight per car which a tire of given size will support, based upon the work which size 810 mm. by 90 mm. will do. This latter, if properly constructed, will, according to the Messrs. Moseley, support a load per wheel of 450 pounds, or, if the load of the car is equally distributed over all four wheels, a car weighing 16 cwt. for from 3,000 to 6,000 miles at an average speed of 25 miles per hour:

Size of tire. mm. mm.	Approx. inches.	Approx. cub. vol. com. air. Cub. inches.	Load. per wheel. lbs.	Load. of car. cwts.
700×65	28×2½	240	210	7½
700×75	28×3	372	287	10¼
700×85	28×3¼	413	362	13
750×85	30×3¼	427	375	13½
760×90	30×3½	476	418	15
810×90	32×3½	513	450	16
870×90	34×3½	558	490	17½
910×90	36×3½	588	516	18½
815×105	32×4	606	531	19
875×105	34×4	650	570	20
820×120	33×5	768	674	24
920×120	27×5	903	792	28

In this table it is assumed that the weight of the car is evenly divided between all four wheels. Of course, this is usually not the case. To determine the way in which the load is distributed, weigh first the front and then the back part of car separately by running first one and then the other half on the platform scales. Add the two weights together, and they should correspond to the total weight of the car. The weight of one-half of the car divided by two is the weight per wheel for front or rear axle, as the case may be. It will be seen why cars heavier than 28 cwt., fitted with tires no larger than 120 mm. (5 inches) run up heavy tire bills for their owners.

Compressed air in motion generates heat. The faster the speed the greater the heat; the greater the heat, the greater the strain on the tire; the larger the tire, the less the increase of heat and strain. So it will be understood that the faster the speed the greater the load per wheel and tire. If there is not sufficient volume of compressed fluid air within a tire to absorb the whole of the shock or vibration, the surplus shock is received by the cover of the tire, which dashes it to the car and engine, causing damage to the tire and to car in a similar manner to the way in which a pool of water receives a solid body thrown into it. If the pool be small, the reception of the shock causes a violent dashing of water against the banks; if the pool be large enough the disturbance is imperceptible. As the compressed fluid air within a tire must be reached through the solid cover, it stands to reason, asserts the Mesrs. Moseley, in conclusion, that the cover should be as yielding, flexible and sensitive as is consistent with road wear and tear, to interfere as little as possible with quick communication of shock to the fluid cushion.

Old Transmission Idea in New Form.

An old idea has just cropped out in a new form in a transmission of foreign manufacture, in which the scheme of using a double bank of gears which are constantly in mesh is utilized. In this particular case, instead of using a series of independent clutches which are applied by means of a key riding within the driving shaft, as in the well known American type, a single toothed member not unlike the male member of an internal crab claw clutch is used, which is fast upon the driving shaft, the latter being shifted longitudinally for the purpose of locking the various gears. In addition to this, a special form of clutch is used upon the driving shaft, which is automatically released by the master key to give a direct drive upon the high, with no gears running.

Adding to the Braking Power.

Rather a novel provision for the use of the motor as a brake has been made in an engine which has just been brought out on the other side. In it the throttle is interconnected with an air valve which opens an inlet at the base of the mixing chamber whenever the former is closed, thereby admitting to the cylinder a charge of clean air, upon which the pistons act in compression and which serves to free the muffler of any partly burned gases, thereby doing away with the annoyance of muffler shots when the gas is again put into action, and at the same time effects a slight amount of economy while the throttle is closed.

German Tire Prices to be Raised.

Competition among the rubber goods manufacturers in Germany is said to be so keen that they have found it impossible to increase their selling prices during the last year or so in accordance with the advance in the cost of raw material. But a point has been reached where it is impossible to continue to sell tires at current prices. The larger manufacturers will endeavor to come to an understanding in order to prevent further losses.

Sand, not Sawdust, for Garages.

It is advisable always to keep the garage floor well sprinkled with sand to soak up any oil or gasolene which may be spilled, thereby saving the tires and lessening the danger of fire. There is a temptation to use sawdust for the purpose, but it should be resisted, as in many cases when soaked with oil sawdust will ignite spontaneously.

STARLEY'S ALL-STEEL WHEEL

British Innovation of Which Much is Expected—Tests to Which it has been Subjected.

It is generally conceded that the wire wheel when properly constructed is stronger, pound for pound, than one built of wood. This has, in fact, been made the subject of laboratory tests and established beyond a doubt. But even this is not a strong enough recommendation to give this form favor in the eyes of those who object to it mainly on the score of appearance, and second, because of the greater trouble in cleaning. Nevertheless, there is more or less interest manifested in the metal wheel, and, provided this be not open to the objections urged against the wire form, it would appear probable that metal will sooner or later supplant wood for this purpose. As things stand at present, the one form extant, the wire wheel, is scarcely seen except on racing cars, and even in that field but rarely.

The forerunner of what may prove to sooner or later become standard has appeared on the other side in the shape of an all steel wheel which is an exact replica of the wooden form now familiar. It is the invention of W. Starley, an Englishman, and is credited with a better appearance than the ordinary wooden wheel. The spokes are of bayonet section, weldless steel tubes, this practically representing the only departure embodied in its construction, as both the rim and hub are of standard make. Tests of the new wheel carried out in the laboratories of the Daimler Company are said to have shown it to be possessed of almost double the strength of the best wooden wheels of the same weight. Further than this, it was said to have shown remarkable elasticity—a quality tending to greatly increase the value of wheels built for automobile use. One of the tests consisted in subjecting it to a load until it showed a total deflection of seven-eighths of an inch, and upon the weight being removed the wheel resumed its shape without any set or deformation. The system employed in building it is claimed to insure absolute accuracy, so that every wheel is true and a perfect circle, and, what is more, defects in this respect brought about by the wheel being damaged are as readily corrected as in the case of the wire wheel, as each spoke is separately tensioned. Upon this feature the patent of the inventor is said to depend, and is accordingly not revealed.

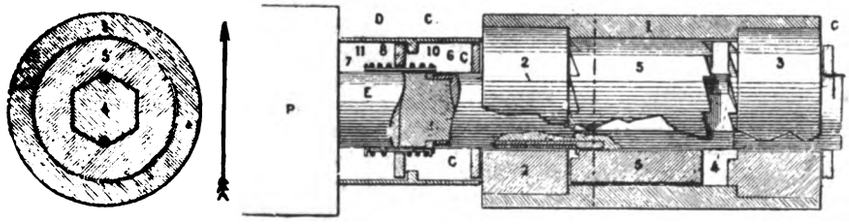
The advantage of having an absolutely true wheel need hardly be dwelt upon, inasmuch as any inaccuracy in the wheel imposes a lateral strain upon the tire, and if the divergence from the perpendicular be serious the tire is dragged back and forth sidewise on the surface of the road, which means a great deal of wear, the amount naturally being in proportion to the extent of the defect. Further than this, there is a constant tendency under such circumstances to cast the tire. Being of metal throughout, further advantages are claimed for it in that it is not subject to that enemy of all wood wheels—"drying out"—and is not affected by climatic changes.

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ELIMINATING DIFFERENTIAL

The Ingenious Fashion in which an English Inventor Accomplishes that End.

Elimination of the differential has long been an object sought after by designers, though the amount of success that has thus far attended their efforts has been small, if not altogether without result. It is necessary that both wheels should be driven whether the car is going straight ahead or rounding a curve, but it is equally necessary that their speed should vary under the latter circumstances. The differential is a more or less delicate and always expensive piece of mechanism and likewise entails added complication in the form of a two-piece axle in the case of the shaft drive, so that the desire to do away with it, particularly on cars where every item of cost is reduced to its lowest terms, may readily be understood.



One of the most recent attempts to accomplish this appears to be embodied in what is known as the Warnaut transmission, an English invention, in which the rear axle is a single piece, in spite of the fact that the driving wheels revolve independently. The axle carries at its centre a bevel pinion solidly attached and meshing with a driving pinion on the end of the Cardan shaft and so far as this portion of it is concerned is absolutely simple, so that there should be small necessity to remove the enclosing case of this bevel gear to inspect it. At each outward extreme of the rear axle is a chamber held in place longitudinally on the axle by collars at each end, and free to revolve with the wheel.

This is a sleeve or hollow cylinder closed at each end by a circular section fitted on the axle and the inner faces of which are provided with ratchet teeth set in opposite directions. In the accompanying illustration the cylinder is represented by 1, and its supporting and closing end pipeces by 2 and 3. In the space between the latter is a part 5 on the squared portion of the axle 4; this segment is likewise provided with ratchet teeth on each end adapted to engage those of the end pieces already mentioned, and which it does according to the direction in which it happens to revolve. At the inner end of the squared portion of the axle 4 are two grooves, opposite each other, cut in the latter for the reception of the rods 6. The latter pass beneath the piece 2 and the inner collar C, and are held together by the cup 7, which can move longitudinally on the axle. On this cup 7 slides, a sleeve 8, carrying on its outer portion a wire, arranged to be turned by a screw, which is fast to a shoulder, and consequently does not move. At the right and left of the sleeve 8 and on the cup 7 are delical springs, 10 and 11, resting with one end on the ring 8, and with the other on the shoulder of 7.

When the car is being driven forward the operation of the various parts of the mechanism is as follows: The revolution of axle in the direction indicated by the arrow causes the part 5, the rod 6, the ring 7, and the sleeve 8 to come together. The sleeve 8 winds on a screw thread and compresses the spring 11; the latter strikes its corresponding shoulder and causes 7 and 5 to engage, which thus lock with 2, the inner end section of the containing case 1. This is the position indicated by the illustration. As this takes place on each end of the axle simultaneously the driving wheels then run together.

But owing to the disposition of the ratchet teeth the wheels must either turn at the same speed as the axle or exceed it. In other words, neither can go slower than the axle is turning. When rounding a curve the inner wheel will accordingly revolve with the axle, but the outer wheel will run freely as its speed will be greater than that of the inner wheel and of the axle. Accordingly only one wheel will be driven when rounding a curve with this mechanism and that the inner wheel.

When running in the opposite direction the reverse of the operation already described in detail takes place and the parts 5 and 3 interlock. A simple arrangement not included in the illustration acts as a brake. Some of the advantages claimed for the device are self-evident, principally those of doing away with the differential and the employment of a simple one-piece axle, although where that of permitting the wheel to be braked on the axle and of distributing the braking strain equally between them enters is not clear, although the following explanation is vouchsafed by the makers.

It is evident that each time one of the rear wheels moves in its plane a braking strain is produced and consequently each time one of the wheels encounters an obstacle it has the effect to momentarily diminish the speed of the wheel, while the other wheel is forced by the differential under the impulse of the motor to go at a higher speed which causes the same stop in its plane and consequently the vehicle receives a shock. The same action causes the lurching of cars going at a speed of fifty to sixty miles an hour, as can be observed during races. All impending actions of the transmission, application of brakes included, irregularly divided between the two wheels necessarily produce a braking strain and a shock for which reason it is absolutely necessary to avoid the direct application of the brake as much as possible. Even the application of the brakes on the differential does not completely avoid the braking strain. The differential allows the wheels to divide as co-workers, and according to their requirements, the stopping effect has to divide itself unequally between them, causing again the inevitable braking strain.

In case of a straight propulsion the motor always communicates to the two wheels an equal proportion of energy, that is to say, one wheel can never be driven quicker than the other and it cannot stop in its plane.

Looking for Leaks with a Match.

Some time has been taken in finding him, but after a short absence the man who looks for leaks in the gasolene tank with a lighted match has been located on the Pacific Coast. Portland, Ore., boasts him as one of her citizens. He happened to be both chauffeur and owner of the car, and is reported to "have gone very carefully over the seams of the gasolene tank with a match in order to find a leak." The fire department obligingly took a hand, and is credited with assisting the fire in making a very complete job of it, as the fire fighters took pains to accomplish whatever the blaze left undone.

Hard Pressed for Names.

Builders of new types of automobiles are about as hard put to it for names as builders of ships used to be in the old days. If anything, they are worse off, in that they seem feel constrained to introduce somewhere in each the name of the motive power. Thus the latest, the "Petromobile," makes its bow in England.

Indians Turning an Honest Dollar.

According to advices, certain enterprising Indians of the Rosebud reservation, Sioux City, Iowa,, affected by the progressive commercial spirit of their white brethren, have bought some touring automobiles, which they will operate through the reservation, on a regular schedule and tariff.

To Build Garage on Mountain.

T. Phillips White proposes to build a large garage and hotel on the summit of the Orange Mountains, in New Jersey, and has obtained an option on a tract of sixty-five acres, where he intends to build. Being in the midst of a popular touring section, he expects considerable patronage from visiting automobilists.

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FAVORS VANADIUM STEELS

Where They Could Be Used in Motor Car Work and the Objects to be Served.

By far the most interesting feature of the development of the motor car is the manner in which it has wrought out new methods and processes in the adoption of the various materials of construction known to the arts, and even has gone so far as to introduce others, for which, up to the present, there had been but slight use, and that to a limited degree. Thus, the manipulation of aluminum, both in casting for structural purposes, in casings and frames, and in the alloys which are used for bearing metals, has been brought to the front largely through the medium of the automobile. But far and away beyond the development of aluminum the effect which the design and construction of the automobile has had upon the development of grades of steel which are tougher and stronger than those demanded by the older arts is of tremendous significance.

The grades of steel which are best suited for the purposes of the motor car builder must, first of all, satisfy the conditions which are found in the best grades of the metal known at the present time, in point of toughness and strength, yet they must go further in endurance under repeated flexture and heavy shock and yield such results as are commonly attributed to the grades of mild steel which are known to common practice. Thus, the use of high carbon and nickel steels is growing constantly, and as well certain newer alloys are coming to be known, such as the chromium, tungsten and manganese compounds, and, latterly, combinations in which the somewhat rare and comparatively unknown element vanadium plays a most important part.

Vanadium steel, though it has been known to the metallurgist for a number of years, has yet to be put to popular test through a general introduction in motor car work. Yet, to judge from the result of tests which have been conducted in England and on the Continent with reference to the demands of this class of work, it is especially well fitted for use in parts which are liable to be called upon to withstand sudden and unforeseen strains. It has already found a considerable use in the chromium compounds as employed in armor plate and projectile work, and also to a limited extent in the construction of such parts as the crank shafts and connecting rods of gas engines.

Vanadium, the element, though widely distributed throughout the globe in the form of oxides which occur in iron ores and also in vanadinate, a mineral containing some 40 per cent of lead, 12 per cent of vanadic oxide and also portions of silica, iron and a lesser amount of silver, is comparatively rare in its pure state. It chief deposits occur in Arizona, South America, Spain and other parts of Europe; also, it is to be found in the ash of certain coals, where in some instances it reaches as high a proportion as 25 per cent, and also in blast furnace slags. The first instance which is known of its being prepared in its pure state was when Sir Henry Roscoe produced a specimen some twenty years ago. At that time it was worth many times its weight in gold. In appearance it is a silvery white metal, of low specific gravity and high melting point. Its preparation is extremely difficult, and can be undertaken only in the electric furnace. Until the introduction of the oxides in steel work the principal uses of the vanadium compounds were in the production of a pigment for textile work and ink making, for which purpose the slags of the Creusot works in France have been reduced for a number of years, the product of the industry in 1900 being said to have reached the amount of ninety tons.

In steel work, until recently, comparatively speaking, the small amounts of vanadium which have occurred in the metal have been lost to a great extent in the reducing process and have been allowed to go to waste. Among the earlier experimenters in the alloying of vanadium directly with iron in the production of highly ductile steels is a French engineer, M. Helouis, who inferred from the great ductility of Swedish iron and the fact that the Staffordshire pigs often contained a great deal of vanadium, while the irons made from the Staffordshire pigs had high ductility, that the effect must be in some measure due to the presence of vanadium in the metal, and accordingly sought to effect a definite combination with the object of toughening the steel. He found that the combination increased the tensile strength of the steel, at the same time reducing its elongation. Also, he learned that steel in which 1 per cent of vanadium was present was extremely soft, though capable of attaining great hardness upon chilling.

Other tests carried out at the Firminy Steel Works, which have become famous for the experimental work on chrome steels carried out there, showed negative results at first, but later developed results which confirmed the work of Helouis and gave remarkable strength to his theory. In fact, one specimen showed a tensile strength of 55 tons, with an elastic limit of 48 tons and an elongation of 10 per cent, before treatment, which upon the addition of the vanadium yielded a test of 74 tons, ultimate, and an elastic limit of 70 tons, while the elongation was increased to 11.3 per cent. The contraction of the vanadium sample was but 47 per cent, as against 54 before treatment. Moreover, it was found that quenching had a far greater hardening effect upon the vanadium steels than it did upon the ordinary carbon combinations.

Professor Arnold, of Sheffield, published the result of certain tests along the same line in 1900, in which similar results were shown, though in less remarkable contrast. A test of a vanadium tool steel was made, in which the latter surpassed a tungsten tool in the proportion of 75 per cent, the tools used being made with 3 per cent vanadium and tungsten, respectively, and tested on a cut in chilled white iron during a ten-minute run. The vanadium tool was found to retain its hardness at a visible red heat. As a result of these and other experiments conducted by Professor Arnold in 1902, the New Vanadium Alloys Co. was formed, and processes were established which are now carried on at the works of the Messrs. Willans and Robinson, of Queens Ferry, Flintshire.

The effect of a combination of chromium and vanadium in a steel which is designed to resist torsional strains is certainly beyond comparison. Thus, a sample containing 1.06 per cent of chromium and 0.169 per cent of vanadium, yielding an ultimate test of 52.6 tons and a calculated shearing stress of 40.3 tons, gave a torsional test of 1,628 degrees, corresponding to 4.52 complete turns before breaking, and another of similar composition gave a test of 4.96 twists before rupture. Still another sample of practically the same composition was turned through 360 degrees and then bent double without breaking or showing flaw.

In a paper read before the members of the Automobile and Cycle Engineers' Institute of England recently, of which the foregoing is in part a rescript, Mr. Alexander E. Tucker made the following statement as to the particular fitness of this compound for steels to be used in motor car construction:

"It would appear that this steel is particularly applicable for crank shafts, connecting rods, etc., of internal combustion engines and, indeed, any constructional work requiring great resistance to shock. I am aware that great trouble and loss have been occasioned by the repeated breakages of the large crank shafts of gas engines working on blast furnace gas and producer gas, and developing some 500 horsepower, and when the intensity of the explosion in these large cylinders is considered, it will be seen that very special requirements are necessary in the metal to meet it. Considerable elasticity is essential in such constructions, and fracture occurs because it is deficient in them. Hence, a metal with a high tensile and a high elongation figure would absorb these shocks very much better than any ordinary mild steel. These vanadium steels show very high figures on the impact tests, and so the sectional areas of such large shafts, etc., and similarly those of the smaller shafts, connecting rods, etc., for motor work would with much advantage be reduced.

"The practical significance of such results are, of course, now being recognized, and many hundreds of single and multiple throw cranks are in use. They have, however, in accordance with the wishes of the motor car builders, been slotted out of the forged bloom in the slab shape, but I am supported by very competent authority in my suggestion that they, with such a metal as we are now discussing, would be better bent from the round, as the flow of fibre would lend itself to resistance to the strains required in the same way that a natural knee for wooden ship construction is always stronger than one built up. With such steel no danger accrues by such simple bending, while the cost would be greatly less. I am informed that to make a six-throw crank weighing, say, 60 pounds finished, something like a 3 cwt. slab of vana-

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dium steel is operated on, the metal removed being, of course, only scrap. The other uses of these steels are for tubular axles, gear wheels, springs, etc., all of which have given excellent results."

Some idea of the effect upon steels of various sorts to be obtained from the use of vanadium in varying proportions may be obtained from the following table:

Crucible steels—	Elastic limit.	Ultimate tensile strength.	Elongation in 2 inches.	Reduction in area.
Plain carbon manganese.	16.0	27.0	35.0	60.0
+0.5 per cent chromium.	22.9	34.0	33.0	60.6
+1.0 per cent chromium.	25.0	38.2	30.0	57.3
+0.10 per cent vanadium.	28.5	34.3	31.0	60.0
+0.15 per cent vanadium.	30.4	36.5	26.0	59.0
+0.25 per cent vanadium.	34.1	39.3	24.0	5.90
+1.00 per cent chromium +0.15 per cent vanadium	36.2	48.6	24.0	56.6
+1.00 per cent chromium +0.25 per cent vanadium	49.4	60.4	18.5	46.3
Open hearth steel— carbon manganese	17.7	32.2	34.0	52.6
+1.00 per cent chromium +0.15 per cent vanadium	34.42	52.6	25.0	55.5

Urges an Automatic Whistle.

A suggestion which should warm the heart of a certain much-neglected former governor whose automatic speed checking brake was never legally adopted by his state, is that of an Englishman, who wants to have all cars equipped with an automatic whistle which shall blow whenever the legal speed limit is exceeded, and continue to blow so long as the rate is maintained. According to the scheme the whistle would remain silent so long as the machine was running at moderate speed, but would begin to wail and wail more and more so as the rate was increased until an unearthly shriek compelled even the most hardened chauffeur to slow down.

Facilitates Priming of Carburetter.

One of the features of the new Napier models for the coming year, upon which much stress is being laid by the English automobile press, consists of a convenience in the shape of an extension rod that permits of the carburetter being primed without the necessity of lifting the bonnet. It is in the shape of a tappet, or rocker arm, the end of which acts on the priming rod of the float chamber. This is connected with a rod extending below the level of the frame and readily accessible.

One More Leather Tire.

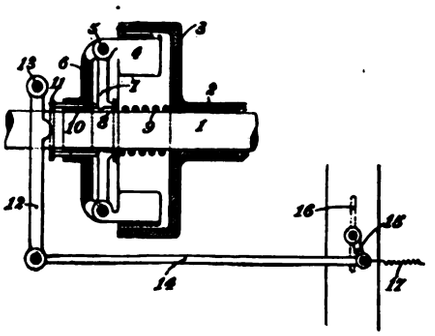
David R. and Oliver Salisbury, from some place out in Michigan, have invented a leather pneumatic tire, from which they confidently expect to reap a fortune. Naturally a stock company will be launched. J. L. Carleton and F. M. Delano, two Detroit financiers, are interested in the venture.

Ten thousand dollars' worth of stock has been placed on the market by the Smith Automobile Co., of Topeka, Kan. If disposed of, the company purposes to increase its plant.

RENAULTS' SPEED REGULATOR

Innovation Adopted by Famous French Makers —How it Controls the Pace.

Compulsory limitation of the speed at which a car may travel by means of a mechanical device which would prevent a certain rate being exceeded is an idea that has occurred from time to time to some bright legislators in this country, and they have suggested that a law be enacted in their bailiwicks making something of the kind necessary on all cars licensed to run on the roads of the particular jurisdiction in question. The idea is one that has apparently never been taken seriously by



any one but the promulgator of the law, and whether that particular individual ever worried much over the question of just how the carrying out of his pet creation was to be realized in the event of its actually finding a place on the statute books is extremely doubtful.

However that may be, Renault Freres have embodied this idea in the form of an automatic speed regulator, which will henceforth be made a feature of their cars and which naturally is of more than passing notice, although not possessed of any mechanical features greatly out of the ordinary.

As shown by the accompanying sketch, the arrangement is mounted on a shaft, 1, which is directly connected with the wheels. This shaft may be the axle of the chains or the shaft commanding the wheels by means of a gear. It is placed behind the speed changing apparatus, and its speed is therefore in direct connection and works together with the wheels. One of the cushions, 2, of the shaft, 1, carries at its extreme end a fixed cylinder cover, 3. The blocks, 4, fix themselves to the pivots, 5, which are held by the arm of a plate, 6, which is fixed on the shaft, 1, and moves inside the cover, 3. Each one of the blocks, 4, is solid, with an arm, 7. The extreme ends of these arms rest with one part on a shoulder, 8, which can grip along the shaft and can be pushed back by a spring, 9. This spring and the shoulder move the arms, 7, to bring the blocks, 4, together with the axle of the shaft. The arms rest on the other side against the extreme end of the rods, 10, gripping the wheels and carrying the plate, 6, which rests with the other ends against the shoulder, 11, on the axle, 1. Against this shoulder, 11, rests an arm. 12, pivoted to fixed axle, 13, and moving on its loose other end a driving rod, 14, which commands by means of a crank, 15, the flap, 16. This flap has to regulate the gas admission of the motor. A small spring, 17, holds the arm, 12, at rest against the shoulder, 10.

When the car is in motion the blocks, 4, are on one side under the control of the spring, 9, and on the other side they are influenced by centrifugal force. As soon as the centrifugal force acts on the mechanism of the spring, 9, the blocks move toward the periphery of the cover, 3. Under the influence of the spring, 17, the arm, 12, is pushed back and the flap, 16, closes more or less. When, on the contrary, the speed of the automobile diminishes the action of the spring, 9, it will then bring this under the influence of the centrifugal force. The blocks, 4, move toward the axle, the arm, 12, is pushed toward the other side and the flap, 16, is fully opened.

What the London Shows Promise.

Among the novelties which are promised at the forthcoming British shows are an eight cylinder motor built for landaulette work, in which the cylinders are arranged in two groups of four each, placed on an incline and at right angles to one another, and designed to be run almost wholly on the high gear; a new type of six cylinder car (a Napier), and a novel type of landaulette, in which the driving sprockets have been placed within the side members of the frame, and are consequently quite out of sight. In both of these machines the motor is located under the driver's seat, the bonnet having been done away with, and the latter is, in addition, distinguished by the use of the Cee springs, such as were used on the coaches of our grandfathers years ago, the body being slung upon leather thoroughbraces.

The general tendency in motor design seems to be toward an arrangement of all the valves on one side of the cylinder, judging from the limited amount of advance information which is obtainable, the use of a single cam shaft which this permits being considered highly advantageous. One or two of the motors shown will have ball bearing crank shafts, following the initiative taken by the Hotchkiss people last year. In body design, the use of the side entrance is said to be firmly established, the fitting and upholstery work being more elaborate than ever. In general, the spring suspensions have been lengthened, and there seems to be also a tendency toward the use of wider rims and larger tires. Pressed steel frames are becoming more and more numerous, and the Cardan drive is gradually supplanting the side chain method.

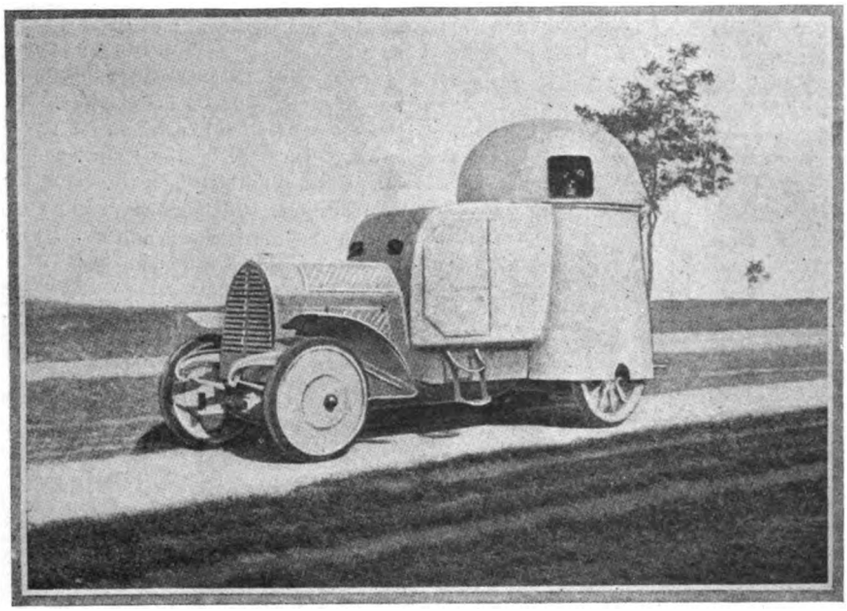
A noteworthy point in regard to the Olympia Show is that of the three hundred exhibitors and more, of which over one hundred show cars, only fifty-one are foreigners, although several of the English houses will display foreign made cars. A distinctly novel feature of the business of the coming year will be in the giving of guarantees. Some firms will give guarantees for six months, others for one year, and still others will warrant their cars for two years

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GERMANY'S PORTABLE FORT

Kaiser's New Rapid-Fire, Rapid-Running Fighting Machine, Embodies Some Ingenious Ideas.

Under the caption of "The Latest Armored War Automobile" the Allgemeine Automobil Zeitung publishes a description of the young gasolene-propelled steel fort shown in the accompapnying illustration. The value of the automobile for military purposes is a subject of unending interest and has attracted considerable attention ever since the car arrived at a stage that revealed it as a factor to be reckoned with, so that it is well to note what has led up to the building of this land cruiser by the Daimler Company.



As in the case of everything German that has to do with the war department, or for that matter, anything official, absolute secrecy is preserved as to the technical details of the car, such as weight, dimensions and the like, merely a general description being given. The body is divided into entirely separate compartments, one for the driver and the other in the shape of a turret for the manipulator of the rapid fire gun that is seen protruding from the port; the turret may, of course, be revolved at will by the occupant. As the driver's compartment is below the level of the firing shelter, the range of the gun is in no way obstructed and takes in the entire horizon. The armor consists of comparatively light, but extremely hard steel plate of sufficient thickness to render it proof against shell fragments and rifle balls, and possibly light artillery. This covers every portion of the mechanism, including an armored ventilator for the bonnet, armored casings for the hubs, axles, steering gear and other exposed parts, the body plating being extended down to within a short distance of the ground. The thickness of the latter has been calculated entirely with a view to affording protection to the mechanism of the car, that of the turret and driver's compartment being much lighter. Using armor of the same weight throughout would have rendered the machine too heavy to get over the ground at any speed. The driver is entirely enclosed in an armor plated conning tower provided with two openings, which permit of the range of vision extending over an arc of about 120 degrees, but he is further provided with an adjustable seat and when not in danger can elevate the latter so that his head protrudes through an opening in the top. This seat may be instantly raised or lowered without disturbing the steering arrangements, according as danger presents itself. This is accomplished by telescoping the steering post and all its auxiliaries so that as the driver changes his position he takes the entire control with him.

In full fighting trim the car is capable of a speed of fifty kilometers or about thirty miles an hour, and when without a sign of human agency visible, it dashes along the road at full speed, it is said to call forth visions of a ghostly apparition and leaves the impression of having witnessed the flight of some huge and terrible monster of unknown origin. As its value would be limited if confined to the road, it is provided with a sufficiently powerful motor and range of speed changes that make it capable of climbing anything up to a 60 per cent grade. Solid tires are used throughout and although not definitely stated it would appear that all four wheels are driven in order to increase traction, and while its stated ability to surmount grades would appear to be something phenomenal and far beyond anything hitherto attempted in this direction, the photographs accompanying the description and which show it cavorting around fields and climbing mounds in goat-like fashion, would appear to bear this out. This is claimed as its great advantage as it is capable of travelling in almost any country that is traversable by light horse artillery.

CARBURETTER EFFICIENCY

Why There is so Little Data Available—One Test that Easily is Possible.

Efficiency is one of the things that has not been sought after so much in carburetter design as effectiveness. It has come to be commonly accepted as a fact that fuel represents an item of least importance in the maintenance of a car, and whether this be exact or not, it is in general a matter of such relative insignificance as not to be considered worth while disputing. Accordingly it has not been thought particularly important to dwell very much on the subject of carburetter testing for efficiency.

The function of the apparatus, regardless of its design, is, of course, to deliver to the engine just the right mixture of gas and air, and in the proper quantity for each impulsive stroke. It should do this whether the engine be running fast or slow. Therein lies the difficulty that has harassed the designer all along, for the speed of the engine has a marked effect on the supply of fuel delivered to it owing to its being drawn through the carburetter by the suction set up by the vacuum in the cylinder. Naturally when varying speeds are to be considered the problem becomes more complicated, for owing to the length of the usual passage between the carburetter and the intake the suction of the engine at high speeds is controlled by an equalizing effect, as though a more constant flow were in force than in the case of the diminished suction at slow speeds.

One point that may be taken for granted when speaking from the point of efficiency is that the ideal carburetter will be one that will supply exactly the amount of fuel required per revolution at any engine speed. To determine this it is only possible to measure its consumption in terms of fuel used per revolution, per horsepower. This means that while the fuel is being consumed it is necessary to ascertain the number of revolutions of the engine, the horsepower developed and the amount of gasolene consumed, which quantity, divided by the number of cylinders and multiplied by two, will give the amount of fuel consumed per impulse stroke of any cylinder. To arrive at such a conclusion it is only necessary to employ simple apparatus, and, given the same engine in every case, the relative efficiency of different carburetters can readily be determined.

In testing one or more carburetters it is, of course, essential that the engine on which they are used should be the same in all cases, because engine efficiency—even though the engines be of the same design, size and construction—is a variable quantity. Given this as a starting point, it is necessary to ascertain its brake horsepower in the usual manner. By increasing or decreasing the load on the brake the engine may be made to run at different speeds as for the purpose of the test the car-

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buretter must demonstrate that it will deliver the proper mixture at varying rates of revolution. For accurately recording this essential a speed counter and a watch are employed. Each power stroke means a certain quantity of fuel drawn from the carburetter, so that, given a constant speed, by determining the number of revolutions per minute it is easy to calculate the amount of fuel consumed per 100 or 1,000 r. p. m. By filling the float chamber until the liquid causes the float to rise and cut off the supply, and then attaching to the inlet a small piece of flexible rubber tubing connected with a vertical glass tube of about one-eighth inch bore, it will be possible by marking graduations on this improvised gauge glass to note exactly how much fuel the engine consumes per 100 or 1,000 revolutions at any load, as applied by the brake and registered in brake horsepower.

The position of the glass tube must, of course, correspond with that of the level of the liquid in the float chamber. While the graduations marked upon the tube bear no relation to any standards, they may be calibrated by ascertaining the cubic capacity of the float chamber, or they will, regardless of this, be of value as a basis of comparison by which to judge of the relative efficiency of different carburetters. Just what would constitute an "ideal" performance is not easy to say, for, as already stated, tests for efficiency have not been made the subject of long standing investigation, but are, on the contrary, something of recent origin, so that there are no precedents extant. But it goes without saying that the particular form of apparatus which demonstrated its capacity to run the engine on the minimum amount of fuel per horsepower and its ability to maintain a constant and uniform supply of mixture regardless of the engine speed, would be the most efficient and economical carburetter.

Foot Pounds vs. Horse Power.

More or less confusion is apt to arise in the mind of the lay reader over the apparently interchangeable use of the terms "horsepower" and "foot pounds" by some technical writers in referring to the performance of an engine. The difference between the two consists, in brief, in that between "work" and "power," since foot pounds expresses the amount of work that is performed and horsepower expresses the rate at which that work is being carried out.

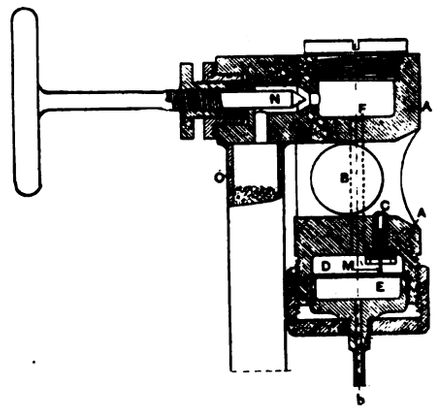
Assuming as an illustration that an engine were to be employed for lifting a weight of 33,000 pounds vertically to a height of 100 feet; then the work to be done would be expressed as 3,300,000 foot pounds, regardless of the amount of time consumed by the engine in performing the task. If, however, only one minute were spent in accomplishing it, then the power would be expended at the rate of 3,300,000 foot pounds per minute, and the output of the engine would therefore be 100 horsepower. Reversing the example and assuming that 100 minutes were cousumed, the power would be exerted at the rate of 33,000 foot pounds per minute and the engine would be producing one horsepower.

INCANDESCENT MOTOR LIGHT

Features of the New Bleriot Lamp, Which is both Smokeless and Odorless.

Notwithstanding the hue and cry which is being raised, both in this country and abroad, over the use of powerful headlights within city limits, there is yet an abundant need of efficient illumination for the traveller over the country road. The use of acetylene for this purpose has come to be almost universal, but it is a recognized fact that were a really practical substitute for it to be produced, the carbide generator would quickly be thrown to the winds in favor of the later production.

Recently considerable stir has been occasioned over the invention by a French maker,



who also claims to have been the first to market a really practical gas lamp for acetylene, of a lamp using gasolene for fuel, and giving a light which in color and intensity fully rivals that obtained from the calcium compound. This is called the Bleriot light, after its inventor, and is nothing more nor less than an incandescent light, using a mantel or pastille of peculiar composition, and deriving its heat from the common fuel of the motor car, burned in an atmosphere of pure oxygen.

The principle of the burner may be seen from the accompanying scetional illustration which shows a cut taken through its centre. The chamber E contains oxygen, which is received under pressure from a supply tank through the pipe b, and serves to equalize its tension. From this chamber is led a small pipe m, of capillary bore, to the base of the burner. The gasolene supply is taken from the regulating valve N, after passing through the filter O, and after being heated in the chamber directly above the oxygen chamber, is fed to the burner through the annular jet C. The flame issuing from the jet impinges upon the lower side of the pastille B, which is composed of an oxide of rare earths and is heated to incandescence.

In starting the light it is necessary to heat the burner by means of a small pad of cotton soaked in alcohol, which is placed upon the top of the gasolene chamber. After the heat has become great enough to vaporize the gasolene within the oxygen is turned on, and after a few seconds the pastille becomes hot and begins to give forth a powerful white light. After this no further attention is required, and the lamp burns evenly and without smoke or smell.

As placed upon the market, these lights are installed in special lamps which are fitted with shutters, by means of which the light may be shaded when meeting traffic. The amount of gasolene carried in the lamp itself is very slight, and this, coupled with the fact that the oxygen, though fed under pressure, is present in but a small quantity at any one time, makes the affair practically safe in use.

Features of the New Panhard.

It is announced that Panhard & Levassor, once leaders in adopting new features, are this year coming into line with other builders, and will produce next season, among their other types, a six cylinder machine. In addition, the regular line will consist of a four cylinder 15 horsepower model and an improved type of 24 horsepower. Probably the most notable innovation in the smaller powered car will be the adoption of the so-called "demi-pincette" or three-quarter elliptical springs, which make possible a reduction in the total length of the body without losing any of the easy riding quality which comes from a long suspension.

Other features, including the armored wood frame, will be retained, the chassis and motor being largely replicas of the present types. The Krebs carburetter will still be used, with hydraulic regulation, as heretofore. For ignition, a new type of the Eisemann high tension magneto will be installed, a feature of the equipment being a provision for the use of dry batteries through the coil and distributer of the magneto in case of derangement to the regular system.

One Cause of Chipping.

The chipping and ring cracking of paint and varnish on running parts cause many a mechanic more or less vexation, because he does not see how to prevent it. Among the causes may be mentioned two, viz., the coats may dry too quickly or there may be more coats then necessary. A running part should never have more than one flat coat of japan color. Chipping and ring cracking is caused by using a color and varnish or a rubbing varnish that dries too quickly.

Here's the Armored Axle.

A decidedly novel form of axle construction has been introduced in one of the new models of foreign cars which has just been announced, in which the usual tubular axle is reinforced by means of an Ash core, creosoted and forced into place. It is the armored wood idea carried out to the last degree.

Keeping the Muffler Clean.

It pays to keep the outside of the muffler clean, not alone for the sake of appearance, but as well because it will retain a greater amount of heat when coated with mud than when clean, and hence will not serve its purpose as well.

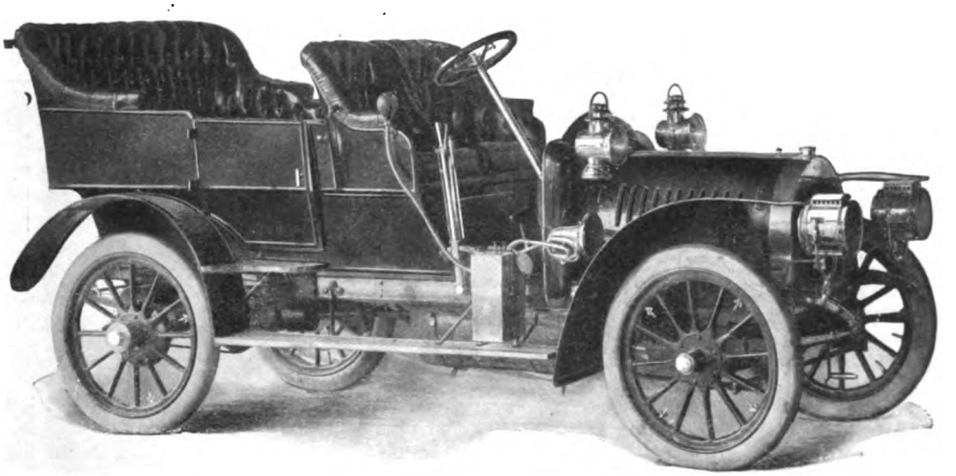
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THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

has arrived and is now on exhibition at our show rooms. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. Equal to any car, built in any country, at any price. Make and break spark. Sims-Bosch Magneto. Bevel gear drive. Continental Tires. Aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order.

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Boston Agents: MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.

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How Peter's Whistle Stirs Peoria.

"Peter Weast has a new air propelled automobile whistle and graveyard disturber," says the Peoria (Ill.) Transcript. "Pete put it on a couple of weeks ago and got it into full voice last week. It is a large whistle with a strong, durable throat and a full contralto voice under excellent control. When in a quiet mood it can be heard a mile. When Pete jabs his firm expansive foot down upon the lever, however, and pulls its larnyx wide open, people in Bartonville get out on the porches and look for a steamer which has wandered out of its course and is trying to make a landing at Bartonville asylum. The whistle is made out of an old second hand Gabriel's horn, and is blown by compressed tornadoes and other atmospheric disturbances produced by an air motor. This motor is able to take an ordinary chunk of Peoria air, which isn't able to produce anything worse than pneumonia by itself, and by mixing it with gasolene and throat gargle, squeezing it into one-tenth its original space and then letting it out, this brass bughouse filler is able to make a noise out of it that makes a horse walk out of the harness sideways and causes a man to think of the hereafter and to talk about it, too, more or less blasphemously. The noise is a cross between a loaded lumber wagon rolling downhill on a granite paved street and a steamboat whistle with bronchitis and the valve tied down.

"Friends of Pete's and others who were his friends until he got this whistle are now able to locate him with unfailing exactness. If the whistle sounds about as large as an ordinary boiler explosion they know he is at least ten miles away. If it is as loud as a Democratic convention on the fifth ballot, they know he is somewhere in the city. If, however, they hear a noise which sounds like a snare drum when you are locked up in a china closet with the player, they get bricks and wait patiently—for he is due around the corner in a few minutes. The contrivance is called a compressed air whistle, but there are those who say that it sounds more like compressed sheol."

Automobiles for An'arctic Exploration.

M. Henryk Arctowski, a member of the scientific staff of the Belgian Antarctic expedition of 1897-'99, which was the first to winter in the south polar regions, is actively interested in the new scheme of polar exploration as set forth in September at the Congress of Mons, in which King Leopold took such great interest and attended personally.

M. Arctowski has just visited London in order to confer with several geographical authorities on the possible outcome of the resolution taken at Mons. He proposes to begin the systematic exploration of the Antarctic regions by a preliminary circum-polar expedition which, organized in Belgium, would leave Antwerp next autumn, with the object of exploring the most unknown sections of the South Pole, in view of finding new lands and suitable places for the establishment of subsequent wintering stations.

The most interesting part of M. Arctowski's prospect is his idea of utilizing an automobile of special construction to penetrate into the interior of the Antarctic continent. He thinks that if this experiment were successful automobiles could be used on the inland ice to transport all the material necessary for the establishment of a far advanced station in the interior, whence further explorations could be made.

Two "Borrowers" Charged With Trespass.

For probably the first time on record a young man, or rather two of them, who "borrowed" an automobile without the owner's permission, have faced a court as a result. Both were employes of Whitefield's garage, in New Haven, Conn. They had a key to the establishment, and, after hours, returned and, "borrowing" the machine, went for a midnight lark.

As so often happens, they damaged the car, but, as does not usually occur, they were promptly haled to the City Court, charged with trespass and the wilful injury of property.

They pleaded guilty, and it was explained to the court that they had agreed to pay $100 for the damage to the car. The court held that as they had a key from the owner there was no trespass. He continued the cases for two months, remarking that the $100 the young men had agreed to pay was more than any fine he would have imposed on either charge.

In the course of the hearing the point was made that there is no law in Connecticut that makes it either a crime or misdemeanor to take an automobile without permission. If a man should take an automobile and offer it for sale, he would commit a theft, but to take a ride in a machine is not theft, if there is no intention to steal. There is a special statute in Connecticut that makes it illegal to take a horse, a bicycle or a boat without permission, but the law does not reach the motor vehicle.

Getting Even With the Judge.

"A farmer in Vineland, N. J., had a brief career as a motorist and has given it up," is the amusing tale of a veracious chronicler. "Some one in a neighboring town who had grown tired of his runabout sold it to the farmer in question for $26, good and lawful legal tender of the United States. It was of the vintage of 1901, which is a pretty old vintage in automobiles, and it looked as if it had seen considerable service. But it would run, and for a week the purchaser had more fun than he had had since he had his first attack of the mumps. Then went out on the public highways, where the deputy sheriffs lie in wait for the motorist, and there fell foul of a hard headed official who decided that he had exceeded the speed limit, took him before the local justice and had him fined $25. The farmer concluded that the machine was worth about that, so he made a deal with the judge and sold him the runabout for the amount of the fine. The farmer says he is satisfied, as he has had a dollar's worth of fun out of the machine; the justice smiles broadly as he drives to market in the car; the constable is sometimes taken for a ride."

When the Two Trucks Tugged.

Quite an interesting unsanctioned event was pulled off in Vernon street, New Haven, Conn., on Thursday morning of last week. The use of the words "pulled off" is conceded vulgar by authorities, but it is well applicable in the case in point. It was a tug of war between two motor trucks, a 20 horsepower Knox and a 24 horsepower Atlas. Fully two hundred persons watched the pulling contest, among whom were the directors of a local company before whom Driver A. E. Dennison was to have demonstrated the Knox truck.

Dennison was about to demonstrate the Knox truck when a driver on an Atlas came along and challenged Dennison to a tug of war. Dennison at first refused, but when the spectators jibed him consented. An inch rope was attached to the rear of each truck, and then at the signal both drivers threw on their power. As soon as the rope became taut it snapped in two under the strain. Two more ropes were obtained and the trucks once more harnessed together. This time the driver of the Atlas got the jump on his opponent, but Dennison threw on his power, and with the engines of the Atlas going at full speed the Knox drew the Atlas truck backward for thirty-five yards, when the Atlas driver shouted, "Enough!" During the struggle the tires of the Atlas car were smoking from the friction, and the macadamized roadway still bears the marks where the machine was pulled backward.

And This Occurred in the Quaker City!

The maddest woman on Market street yesterday morning was a woman in a swell Newmarket cloak and wearing a veil and a pair of automobile goggles, says a Philadelphia scribe. But neither the veil nor the goggles could conceal the annoyance her features expressed when she came from a store where she had been shopping and saw hanging from the front of her big red car, that must have cost at least $5,000, a painted sign reading: "For sale cheap; a bargain to-day, $2.65." A couple of boys on the curb were waiting to see what would happen when the owner of the automobile came along, and there was a crowd about also, wondering who was playing a joke. What that woman said was certainly amazing. Her language actually startled the most hardened who heard, and the boys who caused the trouble turned white and forgot to laugh at their little joke. The carriage man in front of the store said: "That woman can beat the devil himself when it comes to cussin'."

Municipal Ownership Idea in Chicago

Municipal automobiles may be provided for in Chicago's next Council appropriation bill if Commissioner Patterson and Alderman B. W. Snow have a voice in the matter. They very naturally think if all the city officials are provided with the new and approved means of locomotion a greater amount of work can be accomplished. Of course, aldermen perform a deal of the work that requires "running around" and automobiles will prove handy!

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1,000 Miles Without a Single Adjustment

won the Glidden Trophy for the

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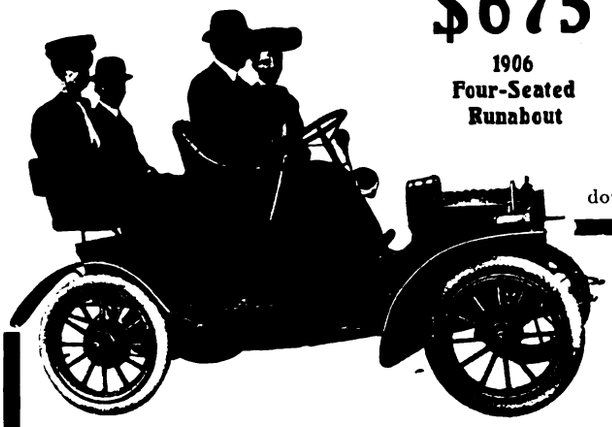
There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads—the Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

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$675
1906
Four-Seated
Runabout

REO

The extra seat carries two people facing forward, and when not in use is folded down snugly out of the way. 8 h. p., 1000 pounds, 25 miles per hour.

5 Prizes out of 7.

In the New York Motor Club's great six-day economy test

The Reo 8 horse power Runabout (shown above) carried 4 passengers 682 miles for $3.81½ per passenger.

By this feat this car won two medals—**The Gold Medal** for all cars up to $1500 in price; and the **MacMurty Medal** for least ignition trouble, having none at all.

The Reo 'Bus with exactly the same horse-power as the Touring Car referred to below carried ten passengers 682 miles for $2.93 per passenger (including ferriage).

And won three prizes:—The **National Trophy** for Economy per passenger; the **W. J. P. Moore Trophy** for Economy per mile, including tire charges, which were only 4 3-10 cents; and the **Morgan Trophy** for the least gasoline per passenger, which cost only $1.60.

Thus 5 prizes out of 7 went to the splendid REO capacity and power.

WRITE FOR REO BOOK THAT TELLS WHY.

REO 1906 TOURING CAR, 16 h.p., 1,600 pounds, 90 inch wheel base, 5 passengers, side-door detachable tonneau, speed 35 miles per hour, $1250.

REO Motor Car Co., Sales Department, Lansing, Mich.
R. E. Olds, Pres. R. M. Owen, Sales Manager.

Agencies throughout the United States.



WHY
PREMIER CARS
Appeal to All Classes.

TO THE PROFESSIONAL MAN—Because of its simplicity.

TO THE BUSINESS MAN—Because of its readiness to go at all times.

TO THE REPAIR MAN—Because of its perfect accessibility to working parts.

TO ALL MEN—Because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5000 recorded miles—is only a trifle over one cent per mile for the car—or 1-5th to 1-4 cent per mile per passenger—total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

"The air cooled season never ends."

Side Entrance Model - $1500 Runabout - $1250
Our new (1906) Doctor's Special, $1425 Light Truck, $1400

PREMIER MOTOR MFG. CO., No. 212 Shelby Street, Indianapolis, Ind.
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¶ The Metropolitan Police Department, at Washington, D.C., have used the Jones Speedometer as a positive means for timing the speeding automobilist, for several years. There isn't an officer in this squad who wouldn't testify as to the accuracy of the Speedometer.



¶ The Judge knows when the automobilist hasn't a Jones Speedometer on his car—that he hasn't any knowledge of his car's speed—and promptly says, "$100 or 30 days," or both.

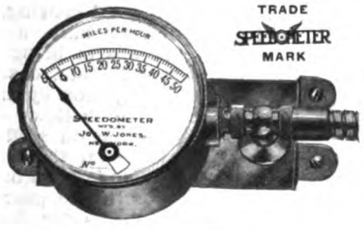
¶ The Automobilist who to day doesn't include a Jones Speedometer in his list of accessories is eliminating two-thirds of the pleasures of automobiling—and is encouraging the officer of the law to make his arrest.



¶ Our Speedometer Bulletin has information concerning our Protection Tag and other interesting speed news. This will be sent free, if you'll write.

JONES SPEEDOMETER

100 West 32d Street, - NEW YORK.



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15 cents per line of seven words, cash with order.

In capitals, 25 cents per line.

A TEN PASSENGER wagonette; sample car, 1905-1906 model; steam; price and description on application. THOMPSON AUTO CO., Olneyville Sq., Providence, R. I.

FOR SALE—40 horse power, 1905 up-to-date Thomas Flyer. Used for demonstrating purposes. Very best condition. A bargain. C. A. COEY & CO., 1323-1325 Michigan Ave., Chicago.

WAVERLY electric runabout of the type styled "Speed Wagon"; new this season and in perfect condition; batteries, thirty cells of 9 p. v.: buggy top. Apply to WM. A. TUCKER, 53 State St., Boston, Mass.

WANTED—A THOROUGHLY UP-TO-DATE FACTORY SUPERINTENDENT, WELL UP ON FOUR CYLINDER CONSTRUCTION, FOR LARGE, ESTABLISHED PLANT. GOOD SALARY AND EXCELLENT FUTURE. ENCLOSE REFERENCE AND SALARY DESIRED. X Y Z, CARE MOTOR WORLD.

VERY, VERY CHEAP—Orient 8 h. p. engine, with carburetor and muffler; Upton transmission; honeycombed radiator; circulating pump; Brown-Lipe steering outfit complete; front axle and wheels; Baldwin roller detachable chain; spark coil; all of above were bought by us new from manufacturers, and are practically new and perfect, having seen only about two months' service on an experimental machine. HENDERSON MFG. CO., Hampton, Ga.

RAMBLER SURREY TYPE I, 18 h. p., in good condition, extras; one shoe, three tubes and other extras; also full Cape top; cost over $1,500; good reason for selling; bottom price, $1,000 cash; will demonstrate. W. R. OLNEY, Oneida, N. Y.

CHAUFFEUR. Young man, 29 years old, desires position on Packard, F. I. A. T. or Mercedes; experience and reference. No Grafter, FRANK TASCHLEIN, 357 West 38th St., New York.

BARGAIN. 1904 Haynes-Apperson 15 h. p. opposed motor. Top curtains, aprons. 4 lamps, 2 extra tires with carrying case, magneto, run 1,000 miles. Just overhauled. $600. Would like offers cash or exchange. WM. DOBBS, Auburn, N. Y.

1905 MARION, 4 cylinders, detachable tonneau; seats 5; Fisk tires; list, $1,500; fine condition; immediate delivery, $1,000. F. S NEWCOMB, New London, Conn.

GRINDING SKATES, is profitable during the winter months. It is easy with one of my holders. Clamps any size skates, on or off shoes. Price, $5.00. C. R. ZACHARIAS, Eagle Hall Block, Asbury Park, N. J.

FOR SALE.

1903 Olds Runabout, new Clincher tires, new Holley carburettor, - - - $275.00
1905 Olds Runabout, large engine, solid tires, newly painted, - - - - - 300.00
MACHINE ELECTRIC SUPPLY CO., Muncie, Ind.

New York School of Automobile Engineers
INCORPORATED
146 West 56th Street, New York City
A High Grade School of Instruction for Chauffeurs and Automobile Owners.
Day and Evening Classes. Now Enrolling Students.
Write, Call or Phone for Particulars.
Telephone, 4314 Columbus.

THE SOLVAY PROCESS COMPANY'S
"KAL-KRYSTAL."
MAKES THE BEST NON-FREEZING SOLUTION FOR AUTOMOBILE USE,
Neutral and Non-Corrosive—Stands 50° below zero Fahr. Put up in 10-lb. cans, makes 2 gallons of solution ready for use.
For sale at all Automobile Supply Houses.
CARBONDALE CHEMICAL CO., - Carbondale, Pa.

WE ARE IGNITION SPECIALISTS
If you have any trouble with your ignition, write us about our Apple Automatic Battery Charger. No trouble to put on any car or engine. For full information write, Dayton Electrical Mfg. Co., 91 Beaver Bldg., Dayton, O.





STA-RITE "STAYS RIGHT THE LONGEST" DEALERS
Condense Your Orders
and buy "Sta-Rite" ignition plugs. We have plugs for every possible need. 47 sizes. Porcelain, $1.50; Mica, $1.75. Advise name of car and secure style best adapted. It makes a great difference.
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than by using $2 of it to subscribe to
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In which each week appears a record of all that is best, brightest and newest in the world of mechanical traffic.

Self-starting from the Seat

"Matheson"

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The Week's Patents.

803,584. Fluid-Pressure Power-Transmission Apparatus. John W. Hall, Brixton, England, Assignor to Hall's Transmission Gear Syndicate, Limited, London, England. Filed March 14, 1903. Serial No. 147,706.

Claim.—1. In a power-transmitting device the combinations of a shaft, extending entirely through the device, and a rotary casing, constituting the driving and driven members, a pressure-creating device, such as a pump, having one of its elements connected with the driven member and its coöperating element connected with the driving member, an adjuster in controllable communication with the pressure-creating device or pump and controlling the movement of the driven member with means for varying the relative capacities of the pressure-creating device or pump and the adjuster.

803,589. Antivibration Device for Vehicles. Edward V. Hartford, New York, N. Y. Filed October 1, 1904. Serial No. 226,863.

Claim.—1. In a vehicle, comprising running-gear, a suspended portion and elastic supporting means between said running gear and suspended portion, an antivibration device comprising non-elastic means for permitting of a limited free movement of the supporting means, but which operates to retard the recoil thereof beyond the limit of free movement, substantially as described.

803,593. Variable-Speed Mechanism. Ebenezer Hill, Norwalk, Conn. Filed February 17, 1905. Serial No. 246,059.

Claim.—1. A variable-speed mechanism having a shaft, a pulley loosely mounted directly on the shaft, four bevel-gears within the pulley, one gear being permanently fixed to the shaft, another being loose on the shaft, and the other two being mounted on the pulley and each meshing with both the fixed and loose gears, means for connecting the loose gear with the shaft, and means for holding the loose gear immovable and disconnected from the shaft, substantially as specified.

803,599. Rotary Engine. William F. Jungersen and John J. Fogh, Brooklyn, N. Y. Filed January 5, 1905. Serial No. 239,693.

Claim.—1. A rotary engine, comprising a casing, an irregularly-shaped chamber therein, an abutment rotatably mounted in the center of said chamber and bearing against the sides thereof and thereby dividing said chamber into a plurality of supplemental chambers, a piston slidably mounted in said chambers and extending on either or both sides thereof and bearing against the opposite surface of said first-named chamber and said supplemental chambers, a valve in communication with each of said supplemental chambers, an exhaust in communication with each of said supplemental chambers, and means for opeating said valves, substantially as shown and described.

803,606. Steering-Axle for Vehicles. Fred A. Law, Hartford, Conn., Assignor to Electric Vehicle Company, Jersey City, N. J., a Corporation of New Jersey. Filed May 16, 1902. Serial No. 107,609.

Claim.—1. A steering mechanism comprising a main body portion, vertical pivot members separately made and fixedly secured to said main body portion by one end only and having their other end unattached, axle members mounted upon said vertical pivots and readily removable over one end thereof, means for controlling the relative positions of said last-named axle members.

803,623. Explosion-Engine. Edward T. Pollard, London, England. Filed October 20, 1904. Serial No. 229,297.

Claim.—1. The combination of two explosion-cylinders, an expansion-cylinder, ports in the explosion-cylinders uncovered at the end of the outstroke, passages connecting the ports to the rear of the expansion-cylinder, and non-return valves in the passages, substantially as described.

803,659. Pneumatic Tire. Arthur S. Allen, Brookline, Mass. Filed November 12, 1904. Serial No. 232,412.

Claim.—1. A tire comprising a body of india-rubber containing a layer of intermeshed oppositely-wound united wire coils embedded therein, the coils crossing said body transversely of its length.

803,810. Speed-Changing Device. George A. Cutter, Nashua, N. H. Filed June 24, 1903. Serial No. 162,955.

Claim.—1. A speed-varying device comprising expansible pulleys having spherically-convex faces, the shafts on which said pulleys are mounted, and the belt connecting said pulleys, substantially as described.

803,989. Armored Tire. Clarington W. Caterson, Franklin Forks, Pa. Filed January 25, 1905. Serial No. 242,591.

Claim.—1. A pneumatic tire consisting of a tubular rubber body and an armor-strip embedded therein, said armor-strip having a substantially flat band with laterally-projecting curved wings conforming to the curvature of the side walls of said body, and a sheath enveloping said strip, the outer portion of said sheath being disposed at a distance from the outer face of said band whereby a space is formed therebetween, and a packing of a fibrous material in said space.

804,088. Pneumatic Tire. Manley H. Blakeslee, Buffalo, N. Y., Assignor of one-half to Roscoe D. Baker, Buffalo, N. Y. Filed December 1, 1904. Serial No. 235,068.

Claim.—1. A pneumatic tire having a series of inflatable sections or chambers, a common air-supply conduit communicating with all of the sections by individual passages, and a plurality of automatic valves each controlling one of said passages and operating to permit free communication between the sections and the supply-conduit in the normal inflated condition of the sections and to cut off communication between the conduit and the sections when one or more of the same become deflated by puncturing, substantially as set forth.

804,104. Friction-Clutch. Albert De Dion and Georges Bouton, Puteaux, France. Filed April 18, 1905. Serial No. 256,298.

Claim.—A friction-clutch having a contact-surface composed of alternations of metal and lubricating material, the lubricating material consisting in blocks of graphite or graphitic carbon inserted in the surface to be brought in contact, substantially as described.

12,399. Antivibration Device for Vehicles. Jules M. M. Truffault, Paris, France, Assignor of fifty-one one-hundredths to Edward V. Hartford and forty-nine one-hundredths to George H. Hartford, Orange, N. J. Filed January 10, 1905. Serial No. 240,511. Original No. 743,995, dated November 10, 1903.

Claim.—1. An antivibration device comprising a friction-disk having a peripheral flange and a flat interior surface, an arm rigidly attached to said disk and means on said arm for securing it to the frame of a vehicle, a second friction-disk concentric with said first disk, an arm rigidly attached to said last-mentioned disk and means on said arm for securing it to the running-gear of a vehicle, a washer seated within the recess formed by said flange and between the faces of said disks, a bolt rigidly attached to one of said disks and passing freely through an aperture in the other disk and means on said bolt for adjusting the disks relatively to each other, substantially as described.

12,402. Vehicle Tire. Herbert Lutz, Hamilton, Canada, Assignor of two-fifths to Benjamin Harris, Hamilton, Ontario, Canada. Filed July 10, 1905. Serial No. 269,135. Original No. 767,949, dated August 16, 1904.

Claim.—1. A tire for vehicles comprising inner and outer concentric series of elastic cushions or blocks, the outer edges of each of said blocks overhanging the body portion thereof, substantially as specified.

804,202. Elastic Wheel. Warnerus Borchers, Berlin, Germany. Fined Jan. 21, 1904. Serial No. 190,087.

Claim.—1. In an elastic wheel having two concentric rims, a hub, spokes connecting the same with the inner rim, universal joints secured to the inner and outer rims and a plurality of elastic links interposed between the inner and outer rim and connected to said joints.

804,212. Change-Speed Gearing. William R. Cary, Milwaukee, Wis. Filed March 6, 1905. Serial No. 248,451.

Claim.—1. In change-speed gearing the combination of two parallel shafts two sets of intermeshing gears, the gears of one set being fixed on one shaft and the gears of the other set being loosely mounted on the other shaft, clutches for severally locking the loose gears to the shaft on which they are mounted, clutch engaging devices to be operated by the power which turns the gearing, and a manually operated shifting device for setting any one of the clutch engaging devices in operative position, substantially as described.

804,263. Variable-Speed Gearing. Adolph Peteler, St. Louis, Mo. Filed Oct. 28, 1904. Serial No. 230,347.

Claim.—1. In a variable-speed gearing, the combination with a driving-shaft and a driven shaft, one of said shafts being hollow and having fluid-ports therein, castings on the hollow shaft having piston cylinders in communication with the hollow shaft through the fluid-ports, pistons in said cylinders, clutch members loose on the hollow shaft and gears carried thereby, gears on the other shaft and in mesh with the gears on the clutch members, and means for permitting fluid to enter the cylinders in one of the clutch members to the exclusion of the others to hold the gear-carrying clutch member non-rotatable with relation to the shaft; substantially as described.

804,284. Device for Removing the Sediment from Gasolene. Harold D. Waterhouse and Frederick W. Green, Quincy, Mass; said Green Assignor to said Waterhouse. Filed Dec. 3, 1904. Serial No. 235,335.

Claim.—1. A pipe-strainer comprising a casing having a vertical chamber, a horizontal outlet-pipe communicating with the top of said chamber, a hollow screw-plug provided with a closed end tapped into the bottom of said chamber, a wire screen interposed between said plug and said outlet and extending over the open end of said plug, an annular passage around said plug near the bottom of said chamber and communicating with the interior of said plug, and an inlet extending from a point near the top of said chamber and communicating therewith near the bottom thereof.

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$1450

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It was never touched during the race. It did its full duty.
It held its water and kept the engine cool.

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Quality and efficiency only figure in an event of this importance.
We make coolers of the HIGHEST EFFICIENCY.

The leading makers of automobiles have recognized this fact by adopting

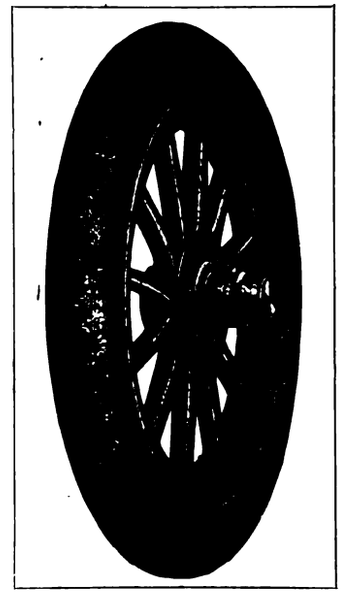
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Will not Buckle. Impervious to Rust. Will not Dish or Crush. Spokes Will not Loosen. Neither Will Rims nor Hubs.

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AUTOCARS.

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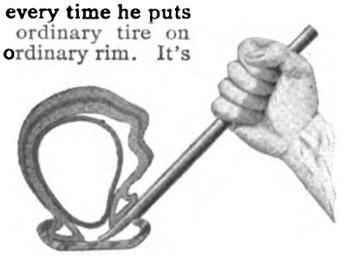
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Why Goodyear Auto Tires Won't Creep

DID you ever try to force an inch tube over an inch and a quarter bar—or to put a pair of No. 7 gloves on a No. 8 hand?

You wouldn't be so foolish, would you?

But that's to all intents and purposes what the Automobile Man has to do every time he puts an ordinary tire on an ordinary rim. It's

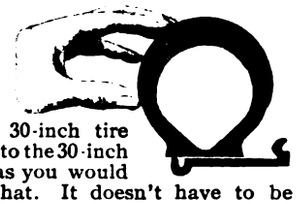


about as hard work as breaking into a bank, and he goes at it the same way, with a "jimmy" and other burglar's tools. Because a 30-inch wheel (for example) is really *31 inches* in diameter, when you consider the flange. So a 30-inch tire has to be forced over a 31-inch rim every time you put on a tire, or take it off.

It's a heart breaking job, even for a strong man, and it takes from half an hour to an hour each time you do it.

And after you have removed such a tire a few times, the base of the tire becomes stretched, and the fabric (used to strengthen it) becomes broken in places, until this tie becomes 31 inches in diameter instead of 30, a full inch larger that the face of your wheel. So you have to bolt it down, or it will creep, tear the valve out and cause all kinds of trouble. And even then you have to keep it pumped up continually as hard as it will stand.

Now the Goodyear Detachable Auto Tire can't creep, because, in the first place, it doesn't have to be *forced* on (if you use the Goodyear Universal Rim). The 30-inch tire slides right on to the 30-inch rim as easily as you would put on your hat. It doesn't have to be pried over a 31-inch flange.

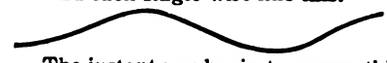


And next, at the first stroke of the pump, the tire begins to grip the rim like grim death, because there is a mesh or tape of piano wire vulcanized clear around the tire on each side of the base.

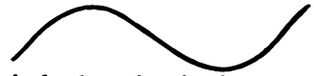
When the tire is flat these wires are like this:



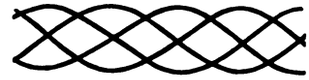
And each single wire like this:



The instant you begin to pump, this wire begins to shorten like this:



And when the tire is pumped up hard, the wire mesh is like this:



If you put a Goodyear Auto Tire on a wood rim, and pump it up hard, the pressure will be so great that the base will squeeze a ridge in the wood.

So the Goodyear Auto Tire need be only *half* inflated, and it will still have a firmer grip on the rim than it is possible to secure with plates and bolts. This, however, is only *just one* of the good points of this trouble-saving tire.

You will find other points in our "Good News Book." It is vitally interesting to every manufacturer, dealer or user, for it shows the way to perfect relief from Tire Troubles. It's FREE. Ask for it.

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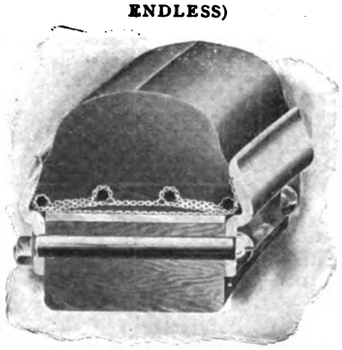
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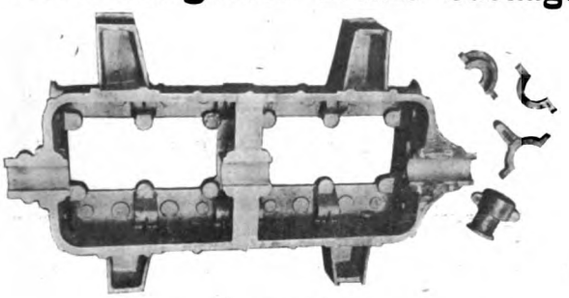
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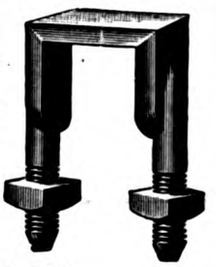
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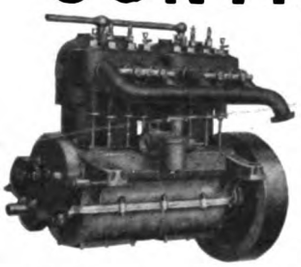
Yours truly,
THE OSCAR LEAR AUTOMOBILE CO.

HILL PRECISION OILERS

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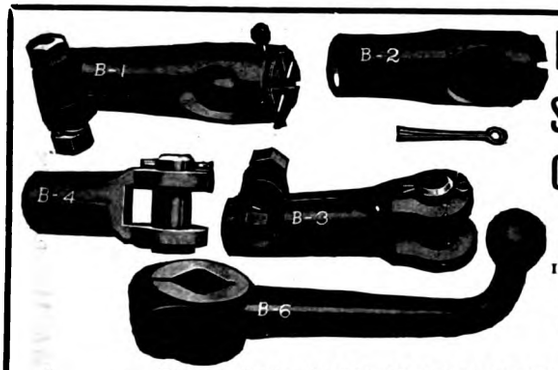
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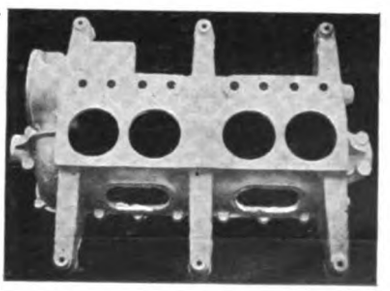
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SIZE "B,"
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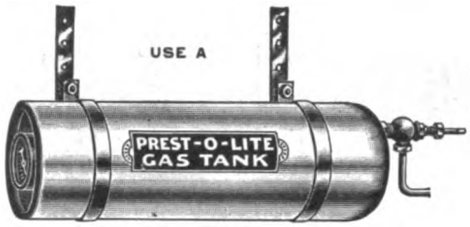
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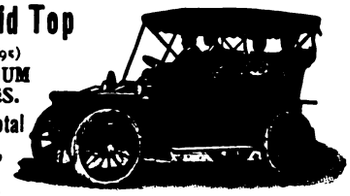
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To Operators of Steam Cars:

Write us for printed matter on the **NELSON STEAM WATER PUMP**, the only positive high pressure boiler feed.

JOHN SIMMONS CO.,
104-110 Centre St., New York.

THE MARION MOTOR CAR

SIMPLY BUILT. SIMPLY RUN.

PRICE, $1500.

Air cooled. 16 horse power developed. Beautiful in design and finish. Easy riding. Speedy. Durable and dependable. We build it.

MARION MOTOR CAR CO., INDIANAPOLIS, IND

Our interesting catalogue yours for the asking.

BALDWIN CHAINS AND SPROCKETS

The Baldwin Chain Company
— MAKE —
Automobile Chains, Sprockets, Spur and Bevel Gears.
—
Baldwin Chain & Mfg. Co.,
Worcester, Mass., U.S.A.

SPRAGUE CANOPIES

All Kinds All Sizes
Prices Right
Send for Catalogue

SPRAGUE UMBRELLA CO., Norwalk, Ohio

BRISCOE MFG CO.

MAKERS OF

Sheet Metal Parts

FOR

Automobiles.

For obvious reasons we prefer not to insert in our advertising matter, at this end of the season, illustrations of our 1906 designs and construction details. Those who are in correspondence with us, however, know what is doing. Manufacturers who want inside information will receive prompt replies to their letters.

Our two large plants are ready to take care of our rapidly increasing business. We can not only promise but make deliveries.

During the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers, among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000

BRISCOE RADIATORS

ARE NOW

Cooling Automobile Engines.

COOLERS FENDERS



HOODS TANKS

EASTERN FACTORY, NEWARK, N. J.

We make

Both Honeycomb and tubular RADIATORS,

Iron and Aluminum HOODS and FENDERS,

Sheet Metal DASHES and SEATS,

Galvanized Iron and Copper GASOLINE and WATER TANKS,

Sheet Metal RUNABOUT BOXES.

Write to our nearest office for estimates and get in line for 1906,

BRISCOE MFG CO.

DETROIT, MICH., AND NEWARK, N. J.

THE MOTOR WORLD PUBLISHING COMPANY,
154 Nassau Street, New York.

Enclosed find $2.00 for which enter my subscription to

The Motor World

for one year, commencing with the issue of _____

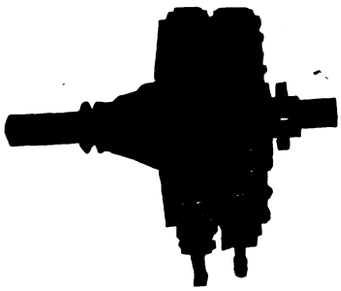
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INDIVIDUAL CLUTCH.
Two Speeds and Reverse.



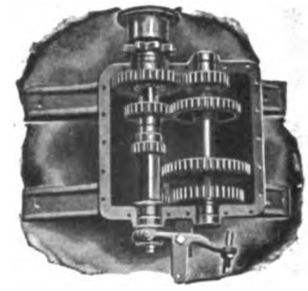
WHAT IS MORE IMPORTANT THAN THE TRANSMISSION GEARS?

What is more important than selecting the right one? We are specialists in that line. We have the know-how, the facilities and the prices.

Why Cannot We "Reason Together?"

SYRACUSE GEAR CO., - Syracuse, N. Y.

SLIDE GEAR.
Direct Drive. Three Speeds and Reverse



Kingston Carburetor.

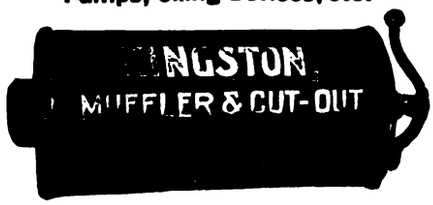
OVER 30,000 IN USE.

Patented May 12, 1903. Other Patents Pending.



KINGSTON

Carburetors, Mufflers, Spark-Coils, Spark-Plugs, Steering Wheels, Pumps, Oiling Devices, etc.



BYRNE, KINGSTON & CO., Kokomo, Ind., U. S. A.

Pat. Jan. 20, 1901.



TRADE GRADOMETER MARK.

An instrument that will enable you to determine the grade per cent. you are ascending or descending.

Sent postpaid on receipt of price, $1.50.
THE ADAMS COMPANY, Dubuque, Iowa.

STANDARD ROLLER BEARING CO.,

PHILADELPHIA.

Steel Balls,
Ball Bearings,
Roller Bearings,
Automobile Axles.

Send for Catalogue.

HIGH-GRADE LAMPS

Acetylene Gas and Oil

ATWOOD MFG. CO.,
Amesbury, Mass.

MOONLIGHT ON LAKE ERIE

PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and growing bolder, bursts forth in one pure sheen of grandeur.

Send two-cent stamp for illustrated pamphlet.

Address

D. & B. STEAMBOAT CO.,
WAYNE ST. WHARF, DETROIT, MICH.

GRAY AND DAVIS

"Makers of Smart Automobile Lamps."

Be Sure YOUR CAR is Equipped With Them. **AMESBURY, MASS**



LONGEST LIFE

COLUMBIA DRY CELLS

NATIONAL CARBON COMPANY, Cleveland, O.

Send for Catalogue.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

On Contract Basis.

Our positive power driven sight feed **OILER** will interest you. Write for description.

Auto Brass & Aluminum Co., Flint, Mich.

DIAMOND CHAINS

OUR CHAINS OUTWEAR ALL OTHERS

Replace your worn out chain with a **"DIAMOND,"** which fits any standard sprocket.

DIAMOND CHAIN & MFG. CO., INDIANAPOLIS

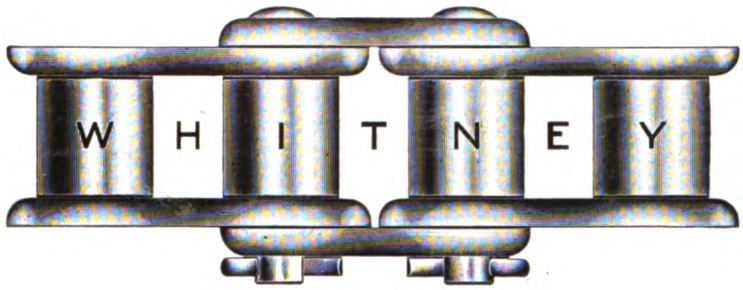
THE
WITHERBEE BATTERY

Solves the Ignition Problem

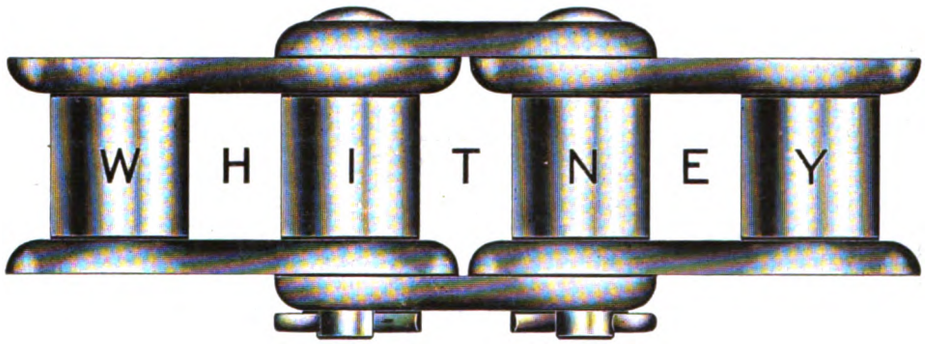
WITHERBEE IGNITION CO.,
27 Thames Street, New York

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Investigate " Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the Leading American Automobile Builders and have been recognized by other chain makers at Home and Abroad. If they are made universal six sizes of chain can eventually take the place of over thirty sizes used in the past.



1906 MODEL "WHITNEY" DETACHABLE CHAINS—Patented.



We urgently request manufacturers to be careful in machining sprockets, to select chains of a suitable size and to provide sufficient space for chain clearance. Thousands of chains used in the past have been damaged by interference.

THE WHITNEY MFG. CO., Hartford, Conn.

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Do you know
Chas. T. Knisely?

Mr. Knisely manufactures automatic iron and copper window frames and the like, and incidentally runs an automobile.

Since the first of May Mr. K. has covered something like six thousand miles—mostly over country roads.

To be perfectly frank about it, he has not been entirely free from tire troubles.

He recollects distinctly that his tires have been punctured two—possibly three—times.

(Death and taxes and punctures are about equally hard to dodge.)

☞ **But aside from these unavoidable accidents he has suffered positively no tire inconvenience in all the six thousand miles.**

This is his own word for it.

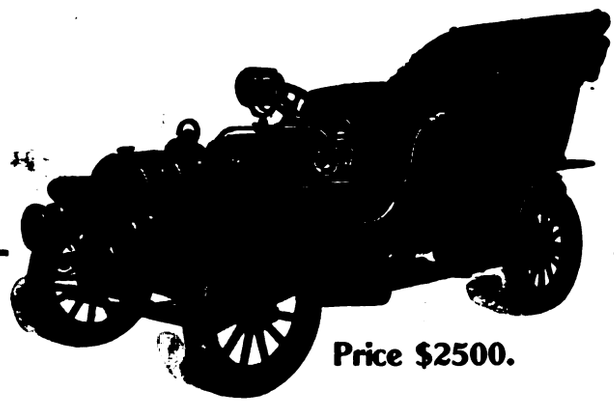
And—like many another man who has had a similar experience—he uses MORGAN & WRIGHT ti

Test tells.

MORGAN & WRIGHT TIRES
ARE GOOD TIRES

MORGAN & WRIGHT, Chicago.

NEW YORK BRANCH (Uptown)—214 W. 47th St. NEW YORK BRANCH (Downtown)—17 Warren St.
PHILADELPHIA—Cor. Broad and Vine Sts. DAYTON—417 E. 5th St. MINNEAPOLIS—717-719 Hennepin Ave. DENVER—1563 Broadway.
BOSTON—328 Columbus Ave. DETROIT—265 Jefferson Ave. ATLANTA—35 Edgewood Ave. ST. LOUIS—533 Vandeventer Ave.
CLEVELAND—947 Huron St. SYRACUSE—212-214 S. Clinton St. SAN FRANCISCO—1067 Mission St. LOS ANGELES—940 S. Main St.



1906 Price $2500. 1906

Pope Hartford Model F, illustrated above, is the car you should buy because of its wonderful efficiency and durability and because, for quietness, speed and hill-climbing qualities, it surpasses everything on the market at anyhere near the price. This new car has proven itself the wonder of the motor world. All parts are built on the **INTERCHANGEABLE PLAN** and are easily **ACCESSIBLE** for inspection and adjustment. We emphasize the following points

MOTOR—Consists of a four cylinder, vertical, water-cooled engine with cylinders cast in pairs. **TRANSMISSION**—Sliding gear, three speeds forward and reverse. **CARBURETTER**—Specially designed insuring economy in fuel consumption and maximum power. **CONTROL**—Throttle and ignition levers on single sector that does not revolve with wheel. **DRIVE**—Bevel gear through propeller shaft to the rear axle. **TONNEAU**—Non-removable, dust-proof double side entrance. **DESIGN**—Artistic in conception and executic

Order Now for Early Delivery. **Price $2500.**

Pope Hartford Model D is our two-cylinder, opposed, 18 h. p., double side entrance, touring car with engine under the bonnet. A dependable machine of established reputation and just the car for the man who prefers to be independent of the professional chauffeur.

Immediate Delivery. **Price $1600.**

POPE MANUFACTURING CO., Hartford, Conn.

NEW YORK CITY, 1733 Broadway. BOSTON MASS., 223 Columbus Ave. WASHINGTON, D. C., 819 14th St. SAN FRANCISCO, CAL., 451 Mission St.

Member A. L. A. M.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

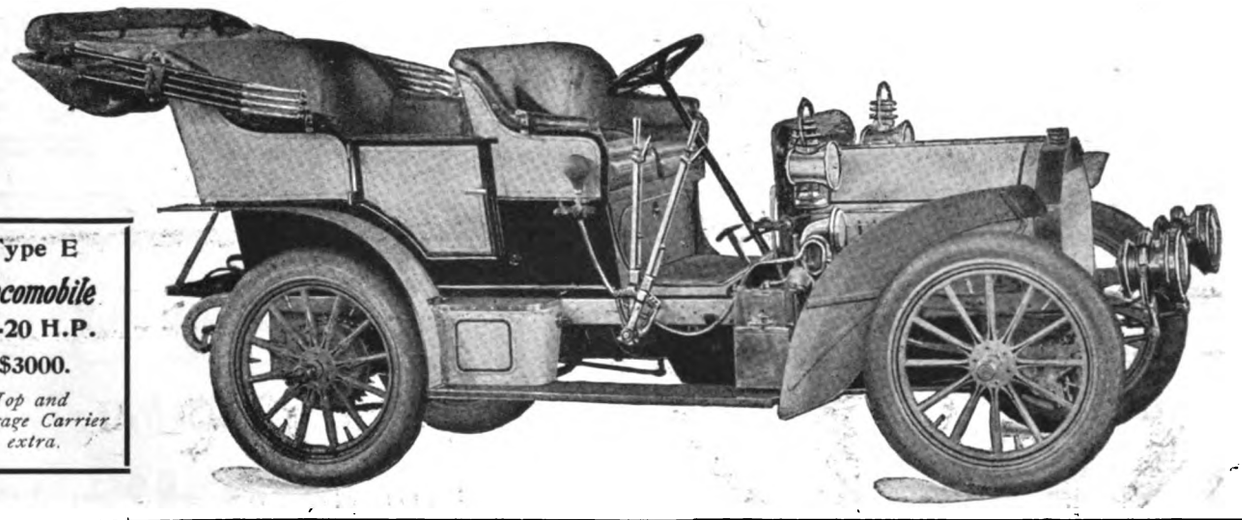
Indianapolis, Ind.

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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

We announce two new styles for 1906, a 15-20 H.P. touring car, $3,000, and a 30-35 H. P. car, $5,000, both with complete touring equipment. These models are almost identical in design, contain the same carefully selected material, and are constructed with equal care throughout—the result of years of careful and consistent manufacture of the standard type of four-cylinder touring car. Locomobiles are fully equal in mechanical details and running qualities to the best imported cars but are especially designed for American Roads.



Type E
Locomobile
15-20 H.P.
$3000.
Top and Luggage Carrier extra.

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, with 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; fitted with top irons; color and striping optional; top and luggage carrier extra.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, with 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance, seating 5 to 7, fitted with top irons, color and striping optional; top and luggage carrier extra.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.

The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 240 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

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This AUTO TIRE has no BAD HABITS

It won't creep—it won't rim-cut—it won't come off the rim when run deflated, no tire bolts required to hold it on the rim—and you can take it off or put it back in 30 seconds, using nothing but the hands. And it's a Tire, besides, that's as resilient as a "soft" tire, and will outwear most "hard" tires.

Sounds like a fish story, doesn't it?

But it's a *fact*, nevertheless.

Barney Oldfield didn't believe it, either, but he does now.

We *showed* him—he saw with his own eyes—and now he uses the Goodyear Detachable Auto Tire with the Universal Rim in all his races.

He used this tire at the Boston meet on Sept. 9th, where he made five miles in 4:55 and a mile in :55 1-5—breaking the track record.

You ought to hear Barney's chaffeur sound the praises of the Goodyear Detachable to all who will listen to him—hear him tell how reliable it is—how it saves him time, trouble and worry and makes his position easy. He says he never thought it possible (before using the Goodyear) to embody all the good points a tire *ought* to have in one single tire.

We wish you could come with us to the factory or to one of our branch stores. Then you could see in no time for yourself just why and how these things are true. You can "see through" it all instantly when the tire is before you.



We'll try, however, to explain just *one point*, here.

Why the Goodyear Detachable Auto Tire is *Durable* and *Resilient* at the same time.

Look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it.

Now right underneath this is the remainder of the outer casing (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The dense rubber and the soft rubber together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove Street, Akron, Ohio

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 598 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

G & J

Tires

Hold the 100-Mile

World's Record

At Indianapolis, Saturday, November 4, W. F. Clemens in a National car fitted with G & J Tires reduced the 100-mile track record to 1:53:21 2-5—not a moment's delay on account of tires. G & J Tires are speedy. They are the most serviceable tires on earth.

G & J TIRE CO.

Indianapolis, Ind.

Boston Buffalo Cleveland Detroit Chicago Chicago San Francisco

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The dealer who secures the agency for

QUEEN AUTOMOBILES FOR 1906

is bound to have real and substantial

CAUSE FOR THANKSGIVING.

THREE NEW MODELS.

BIGGEST VALUE EVER OFFERED.

The QUEEN BEE

4 Cylinders, 26-28 H. P.

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

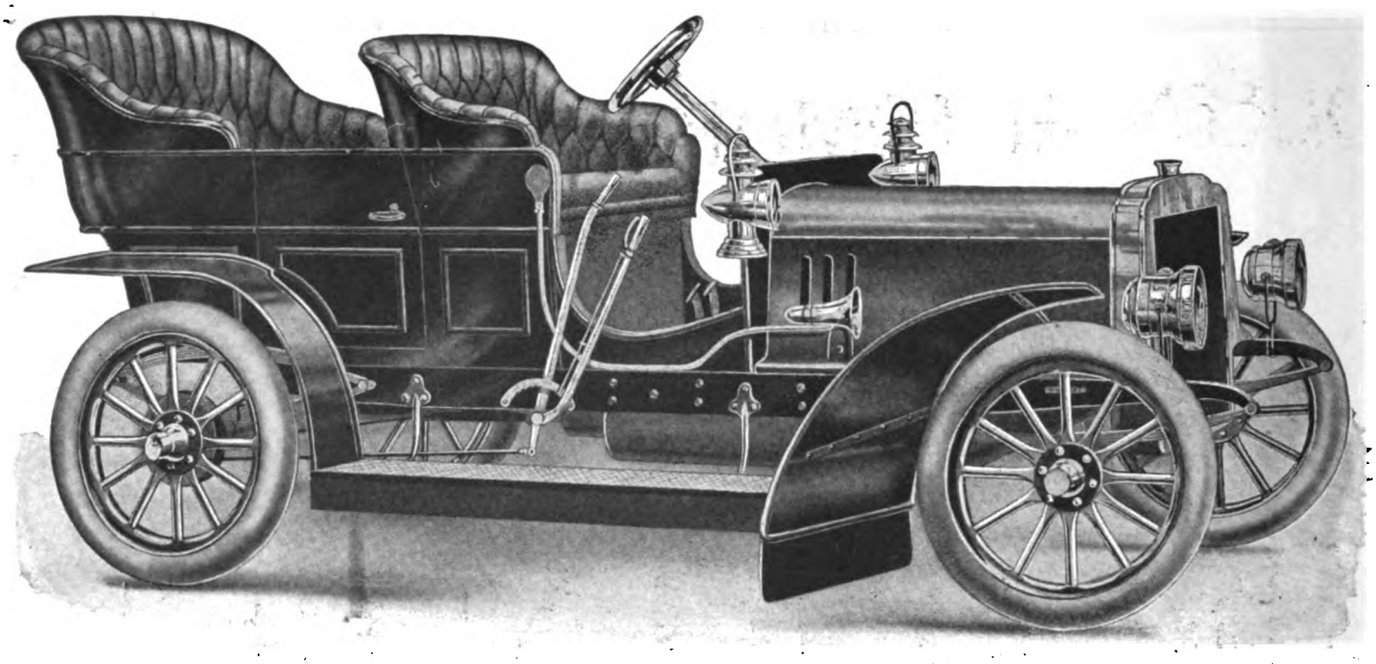
We also have an 18 h. p. two cylinder car with detachable side door tonneau list at $1 100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry.

C. H. BLOMSTROM MOTOR CO.,

DETROIT, MICH.

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1906 Ford 6 Cylinder Touring Car Price $2,500

6 cylinders 40 h. p. 4 to 50 miles per hour on high gear. *Perfected* magneto ignition—mechanical oiler, 114 inch wheel base, luxurious body for five passengers, weight 2000 pounds.

1906 Ford Runabout is as advanced as our touring car in design and even more surprising in price—will be fully illustrated and described early in December.

Both these Cars on exhibition at the New York Automobile Show.

Ford Motor Company

Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

Canadian Trade supplied by the Ford Motor Co of Canada, Ltd., Walkerville, Ont.

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THE CELEBRATED BRAMPTON CHAINS

MADE FROM SELF-HARDENING STEEL



TWO PAIRS OF CHAINS IN 75,000 MILES.

EALING, LONDON, February 13, 1905.

BRAMPTON BROS., Ltd.

Dear Sirs:—We are using a Napier Car for conveying our "RISIN' SUN" METAL POLISH throughout ENGLAND, calling at the various stations en route to replenish the loads. We estimate the car has now covered a distance of 75,000 miles in about three years and five months, running daily with scarcely any delay, the only renewals worth mentioning were Brasses to Pistons, Chains only once (BRAMPTON'S), tyres frequently, CONNOLLY'S large solids have proved the most durable.

Yours faithfully, JOHN EDWARD SHARP & SON.

YOUR AMERICAN CAR

can be and will be fitted with the celebrated Brampton chain if you order it that way, and it won't cost you or the manufacturer any more than an inferior chain the kind that breaks and stretches and have to be replaced every few hundred miles. All standard sizes in stock to fit American and Foreign cars.

We are Sole United States Agents for this Line of Chains, and are Ready to Quote Manufacturers Interesting Prices on American Standard Sizes.

Catalogue Mailed on Request.

CHARLES E. MILLER MANUFACTURER, JOBBER, EXPORTER AND IMPORTER

HOME OFFICE: 97-99-101 Reade Street, New York City, N. Y.

BRANCHES: Broadway and 38th Street, New York. Philadelphia, Pa.—318-320 N. Broad St.
Boston, Mass.—202-204 Columbus Ave. Cleveland, O.—408 Erie Street.

Parts for 1906 Automobiles:

For the convenience and assistance of automobile builders we have prepared complete drawings of our 1906 model pressed steel frames and frame members, and other parts, which will be mailed upon application. We are prepared to build pressed steel frames, change gears, front and rear axles and other parts in any quantity for early delivery.

STEEL STAMPINGS:

We make a specialty of steel stampings of all descriptions, including hubs, parts, brake drums, etc.

STEERING WHEELS:

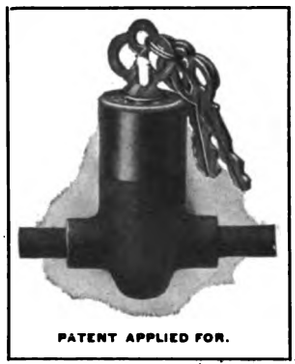
Another specialty of ours—we make the best steering wheel rim on the market, and a large variety of spiders for application to any steering column.

Send for our Steering Wheel circular

A. O. SMITH COMPANY

Milwaukee, Wisconsin.

No More Borrowing Cars Without Owner's Permission


PATENT APPLIED FOR.

The Hill Lock Valve

(here shown), is a new device and a good one. It is connected at any convenient place in the gasolene pipe and when locked and the key withdrawn prevents the gasolene from flowing to the carburettor and consequently the engine cannot be started. The key cannot be taken from the lock until the gasolene supply is entirely shut off—when shut off keep the key in your pocket. Impossible for anyone to steal your car. Your fuel supply is **locked,** but your car can be pushed to the wash-stand for cleaning, or into the street in case of fire. It is a small device made entirely of brass and turned with a "special key"—no two keys are alike. The lock is of the finest grade, it has five tumblers and cannot be picked or opened without the "right" key. Three keys are furnished with each lock. The locks are perfectly tight, being tested by gasolene under a pressure of one hundred pounds. It is made for all sizes of pipe from the smallest motor-cycle or launch to the most powerful touring car. Price, $5.00. **Special price to Supply Houses and Automobile Manufacturers.** Apply to your supplyman or garage. If not found in stock, address

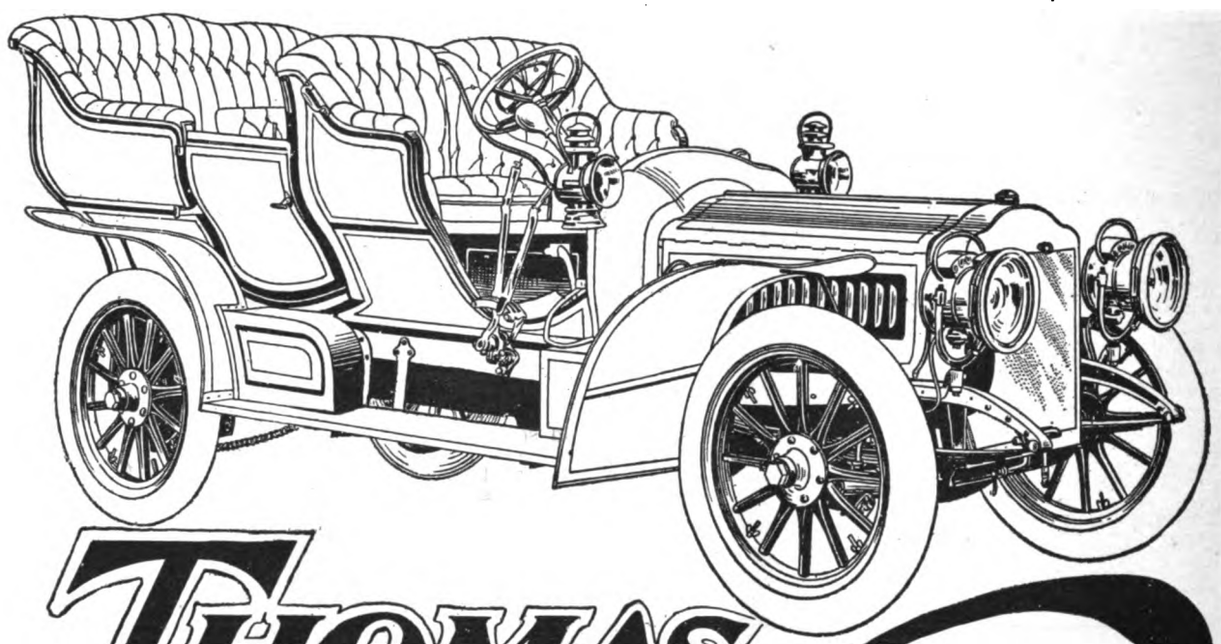
E. HILL, Jr.,

Norwalk Iron Works Co., SOUTH NORWALK, CONN.

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AN AFFIDAVIT THAT SPEAKS VOLUMES:

"Every Stock Car Guaranteed to Show Sixty Miles an Hour Before Leaving the Shops."—E. R. THOMAS.



THOMAS

Can any praise of ours compare with the eloquent testimony concerning the 1906 Thomas contained in this remarkable affidavit?

BUFFALO, N. Y., Nov. 10, 1905.

This is to certify, that we, the undersigned, this day rode at the rate of 60 miles per hour with five passengers over average roads, maintaining a speed continuously in regular stock model 1906 Thomas touring car, and went up a 14 per cent. grade with five people on the high speed and on very bad roads, increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation, and the clutch is extraordinarily sweet and effective.

This is the only American built stock car that within our knowledge has made 60 miles per hour on ordinary roads, even without passengers.

(Signed) AUBREY H. MARTIN, Philadelphia, Pa.
C. A. COEY, Chicago, Ill.
F. W. DART, Hartford, Conn.
C. S. HENSHAW, Boston, Mass.
F. B. HARPER, Beverly, Mass.
A. M. SPEER, Jr., Portland, Me.
A. S. ROBINSON, New York.
RAYNER GOODWIN, Brooklyn, N. Y.

STATE OF NEW YORK, }
COUNTY OF ERIE. }

Sworn and subcribed to before me this 10th day of November, 1905.

ARCHIE I. DRAKE, Notary Public.

THE E. R. THOMAS COMPANY,

1416 Niagara Street, - - - - - BUFFALO, N. Y.

Member Association of Licensed Automobile Manufacturers.

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UNUSUAL RESILIENCY

IS JUST ONE OF THE THINGS WHICH MAKE



Diamond

SOLID SIDE WIRE TRUCK TIRES

The Most Desirable for Commercial Car Equipment.

Let us send you some interesting literature concerning sizes, weights, etc.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.
DETROIT—158 Jefferson Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—323 Huron St.
SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

THE STANDARD AMERICAN COOLER.

THE WHITLOCK COOLER

was used on the

LOCOMOBILE RACER that finished THIRD

in the

VANDERBILT CUP RACE.

It was never touched during the race. It did its full duty.
It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Races, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance.
We make coolers of the HIGHEST EFFICIENCY.
The leading makers of automobiles have recognized this fact by adopting

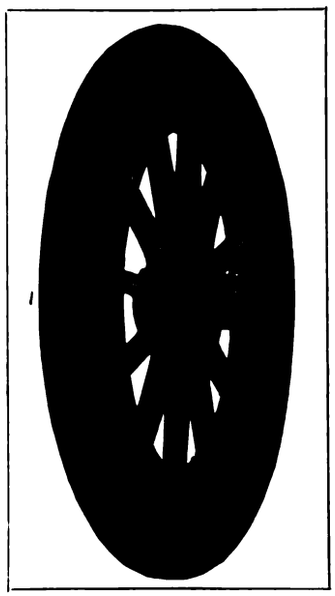
THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905, 1906.

THE WHITLOCK COIL PIPE COMPANY,
HARTFORD, CONN.

MIDGLEY

Pressed Steel Wheels.



SOME OF THEIR ADVANTAGES:

STRENGTH,
ENDURANCE,
TRUENESS,
BEAUTY.

Will not Buckle. Impervious to Rust. Will not Dish or Crush. Spokes Will not Loosen. Neither Will Rims nor Hubs.

See Our Latest Design on 1906

AUTOCARS.

Write for Booklet.

THE MIDGLEY MFG. CO., Columbus, Ohio.

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An Investigation of GOODRICH TIRES

Mr. E. Shirts, cashier of the Citizens National Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new. His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with Goodrich Tires 3 in. x 30 in. I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and I found them in perfect condition, not even rim-rusted.

I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.



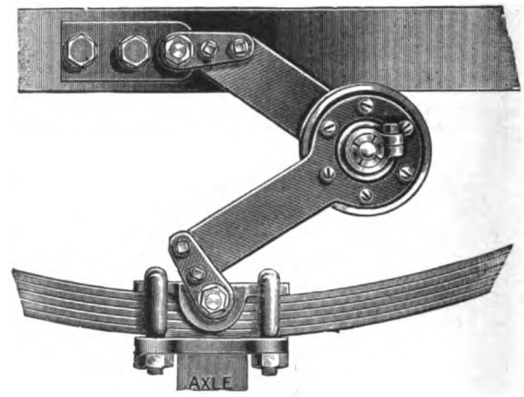
Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company

Akron, Ohio.

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 781 Main St.
SAN FRANCISCO, 892 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 909 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 430 Superior St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.

TRUFFAULT-HARTFORD SUSPENSION



RESULTS OF VANDERBILT ELIMINATION CONTEST

On Long Island Course. Sat., Sept. 23, Average Time, Almost 57 Miles per Hour.

The cars of these two leaders were equipped with the TRUFFAULT-HARTFORD SUSPENSIONS, which enabled them to win. Only 59 seconds separated them.

1st. DINGLEY, (Pope-Toledo, 60 H.P.) 2 Hours, 50 Seconds.
2d. TRACY, (Locomobile, 90 H.P.) 2 Hours, 1 Minute, 49 Seconds.

The third car ran 19 minutes behind the leader

AND WAS WITHOUT THE TRUFFAULT-HARTFORD SUSPENSIONS

Racing or Touring, if you want to Finish Among the Leaders Equip Your Car with

THE TRUFFAULT-HARTFORD SHOCK ABSORBER.

Hartford Suspensions Were on All the Winning Cars in These Prominent Contests Recently Held.

Glidden Tour; French Eliminating Trials; Gordon Bennett Race; Ardennes Circuit Race, French; 1,000 Mile Track Record, Guy Vaughn.

HARTFORD SUSPENSION CO.

EDWARD V. HARTFORD, President 69 Vestry Street, New York City

Volier Horns



Think of the reeds! Think of the bulbs!

Have you even heard of a horn being offered as

"BETTER THAN THE VOLIER?"

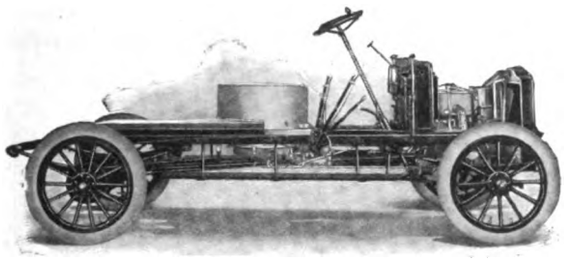
THE POST & LESTER CO., HARTFORD, CONN

Sole American Distributors of Volier Horn.

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The Incomparable WHITE

The Car for Service.



Above is shown the chassis of the Model "F" White car which we are now delivering with touring car, runabout, limousine, victoria and landaulet bodies.

Steam power as utilized in the White car, possesses unique advantages. There is absolutely no noise, no odor, no vibration and the speed of the car is controlled entirely by throttle. There is an ever-present reserve of power which is often found most useful.

The White steam generator is totally unlike any other steam-making devise ever designed. To illustrate the radical difference, we might point out that in our generator the water is at the top and the steam at the bottom. In every other type of boiler, the steam is at the top and the water at the bottom. The safety, simplicity and reliability of the system is demonstrated by the performance of the thousands of White cars now in use.

WRITE FOR WHITE BULLETINS WHICH TELL THE STORY OF WHITE VICTORIES.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

A MILD COMPARISON

A comparison of the record made by the "HAYNES" car in the elimination race for the Vanderbilt cup, with that of far more powerful cars that were allowed to enter the race is

—most interesting

Get a record of the two events—

—and compare

Put the "HAYNES" record in the trials beside that of some of the cars that were allowed to enter the real race—

—and compare.

Study what the "HAYNES" did, and what some of the others DIDN'T DO—

—and compare.

A few LIVE Agents wanted in a few localities. WRITE QUICK for particulars.

We are booking orders for exact duplicates of our Vanderbilt entry in the order of their receipt.

The Haynes Automobile Co.,

New York — **Kokomo, Indiana** — Chicago

Members A. L. A. M.

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Self-starting from the Seat

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

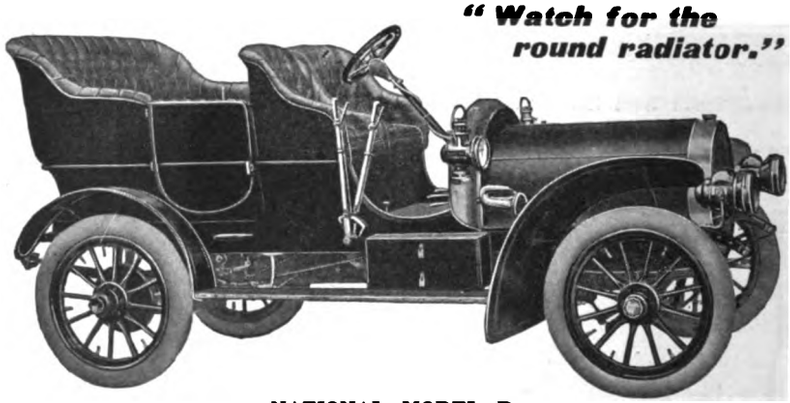
Our New Factory now building, in WILKES-BARRE, PA., will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then . . . . . **MATHESON MOTOR CAR CO. Holyoke, Mass.**



National

BREAKS WORLD'S 24 HOUR RECORD.

"Watch for the round radiator."



NATIONAL MODEL D.
One of the same kind fully equipped.

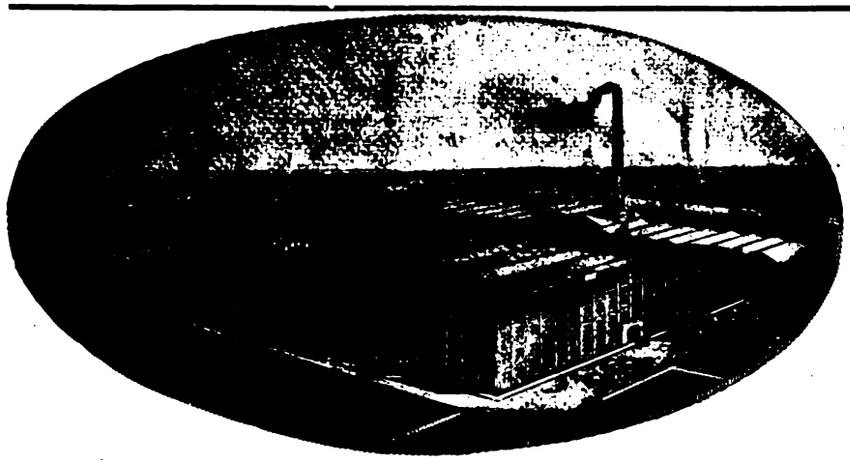
A NATIONAL STRIPPED STOCK CAR at INDIANAPOLIS, November 16-17th, made **1094 3-16** miles in **24 hours, breaking the former WORLD'S RECORD** by **78 9-16 miles,** and **1,000 miles in 21 hours, 58 minutes, 4-5 seconds,** breaking the former record by **1 hour, 35 minutes and 19 1-5 seconds.** ALSO BREAKING MANY OTHER RECORDS TOO NUMEROUS TO MENTION IN THIS SPACE AND **GIVING A MOST CONVINCING DEMONSTRATION OF THE UNFAILING RELIABILITY OF NATIONALS.** Write us for anything else you want to know.

NATIONAL MOTOR VEHICLE COMPANY, 1007 East 22d St., Indianapolis, Ind.

DISTRIBUTORS

RALPH TEMPLE, 810 Michigan Ave., CHICAGO.
LINSCOTT MOTOR CO., 168 Columbus Ave., BOSTON.
HOMAN & SCHULZ CO., 88th St. and Broadway, NEW YORK.
TIOGA AUTO CO., Broad and Tioga Sts., PHILADELPHIA.
LIBERTY AUTO CO., 138 Beatty St., PITTSBURG.
NATIONAL MOTOR CAR AGENCY, 705 So. Main St., LOS ANGELES.

Member American Motor Car Manufacturers' Association.



The output of complete Front and Rear Automobile Axles of this plant exceeds the capacity of all competition combined.

THE American Ball-Bearing Co.

L. S. & M. S. Ry. & Edgwater Paak,
CLEVELAND, OHIO, U.S.A.

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DID ANYONE EVER HEAR

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

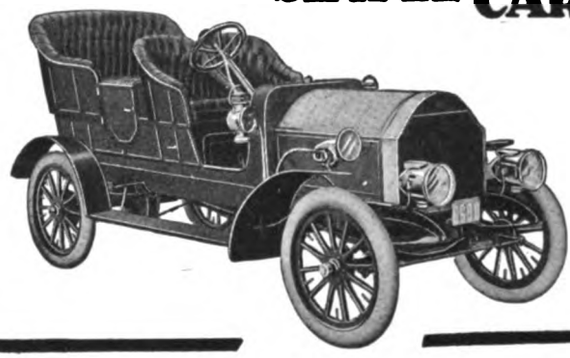
ROYAL

We have a full description of 1906 model ready to mail to you, if you will send us your address. Will also mail booklet explaining performance of 1906 model in Vanderbilt Trial Race.

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.
Member A. L. A. M.

AGENTS: C. A. DUERR & CO., New York, N.Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE SUPPLY CO., Lim., Toronto: MOTOR SHOP, Philadelphia, Pa.: WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS PIERCE & CO., Syracuse, N. Y.; THOMPSON SCHOEFFEL CO., Rochester, N. Y

GAS-A-U-LEC
"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

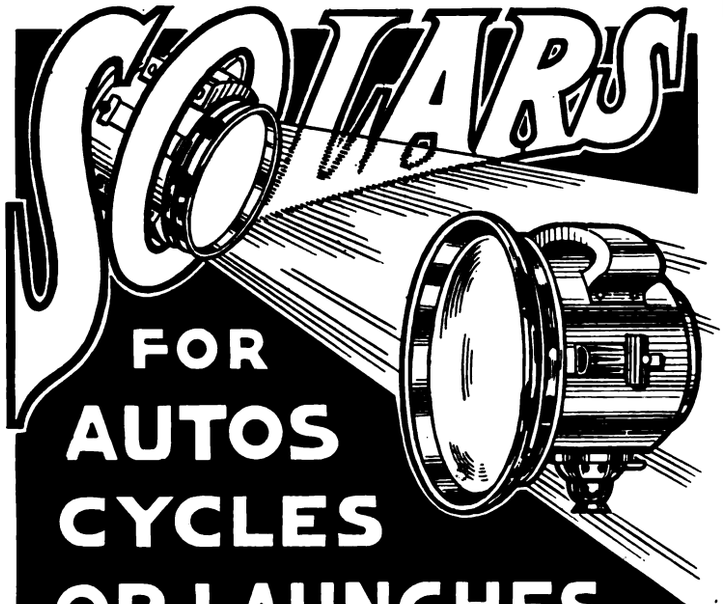
both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,
Peabody. Mass., U. S. A.

SOLARS



FOR AUTOS CYCLES OR LAUNCHES

Mr. Dealer, why not handle a line that you know will satisfy your customers instead of taking chances on "Just as good" lamps. Your profit is as much or more on Solars and your customers "stick."

Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO., Kenosha, Wis.
NEW YORK OFFICE: 111 Warren Street

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should *not* buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the *two* cycle two cylinder Elmore engine.

Understand—the *two* cycle two cylinder Elmore engine produces *two impulses every time the fly-wheel turns.*

As you know, the two cylinder *four* cycle furnishes only *one* impulse every *fourth* time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached ts climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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MICHELIN

TIRES OF THE HIGHEST CLASS.

MR. WILBERN SENDS THE FOLLOWING UNSOLICITED TESTIMONIAL.

Mr. E. D. WINANS, Sec'y and Gen'l Manager,
Michelin Tire Co. of New York.

Cincinnati, O., Nov. 3, 1905.

Dear Sir:—Thirty thousand miles on Michelin Tires covering twelve Countries in Europe, above the clouds in Switzerland, below the sea in Holland, from Bull Fights in Spain to Chicken Fights in England, down Historic Rhine, and back again to the "land of grind organ and Monks." I have bought all kinds of tires, every known make; but the MICHELIN are the best, last the LONGEST.

With pleasure I can recommend them to all tourists. Will tour again next Spring and Summer in Norway, Sweden, England, Ireland and Scotland, and will wear nothing but MICHELIN Tires on my 40 H. P. Hotchkiss. Very truly,

(Signed) EDWARD V. WILBERN,
Director "Provident Savings Bank and Trust Co.," Cincinnati, O

If you want the best, follow Mr. Wilbern and buy MICHELIN TIRES.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

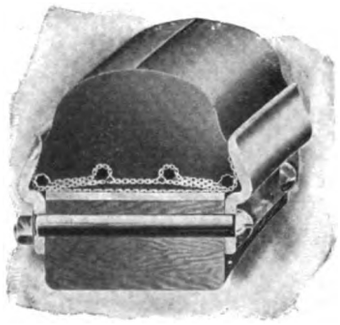
E. D. WINANS, General Manager,

Telephones—{760 / 761} Madison Square, New York.

6 West 29th Street, New York

BRANCHES IN PRINCIPAL CITIES OF UNITED STATES.

TURNER SOLID TIRE
ENDLESS)



THE CORRECT TIRE
FOR

Delivery Wagons,
Heavy Trucks,
Broughams,
Hansoms, Surreys,
Victorias,
Hotel 'Busses,
Hose Wagons,
Ladder Trucks,
Chemical Engines,
Water Towers,
Fire Engines.

TIRE ECONOMY

COST OF MAINTENANCE is main factor for consideration in selecting tire equipment.

MAKE CAREFUL COMPARISONS.
Don't be prejudiced by poor results obtained from cheap tires.

STOP EXPERIMENTING and end dissatisfaction by adopting a tire that has demonstrated its worth by years of use under all conditions, and to thousands of satisfied users

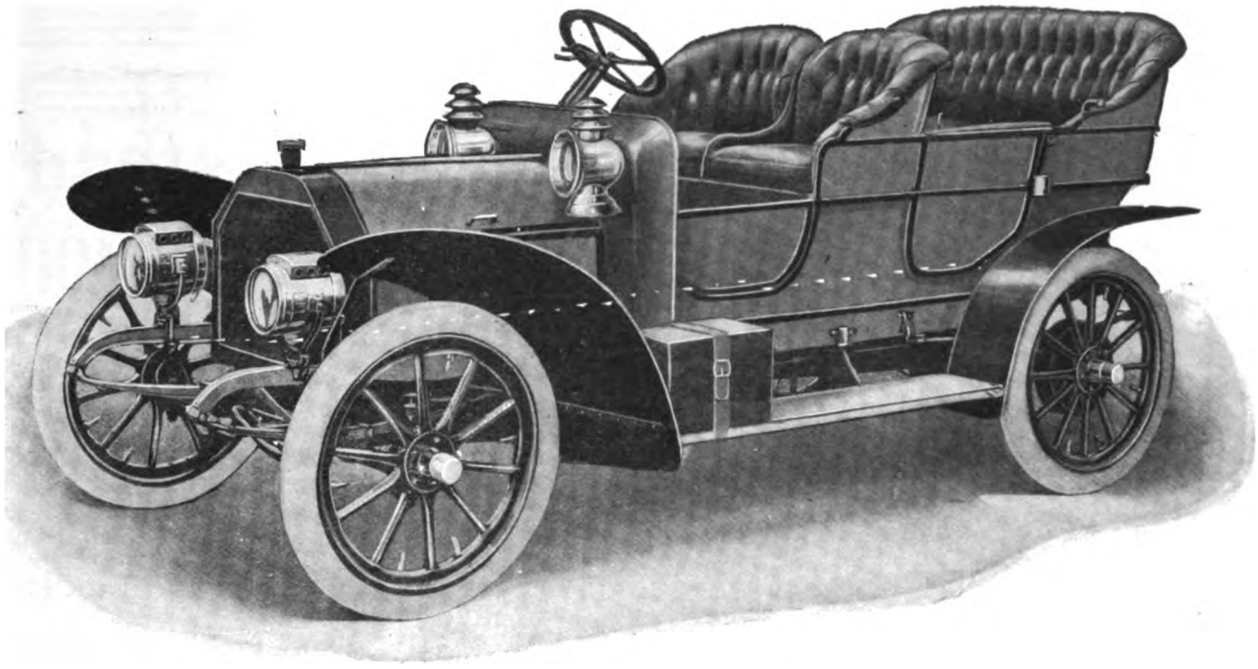
PROVEN LOW COST OF MAINTENANCE.

THE HARTFORD RUBBER WORKS CO.

HARTFORD, CONN.

Branch Houses:—NEW YORK, BOSTON, PHILADELPHIA, BUFFALO, CLEVELAND, DETROIT, CHICAGO, DENVER, SAN FRANCISCO, LOS ANGELES.

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Oldsmobile Palace Touring Car, Model "S," Price $2250.

It is only necessary to enumerate the different features of our Palace Touring Car to convince the man who knows automobiles of the sound judgment and thorough experience upon which its construction is based. To convince the most skeptical of its touring qualities, a practical demonstration is irresistible. In every line, at every point it is "there with the goods."

The four-cylinder vertical water-cooled motor easily develops 24 to 26 horsepower. Cylinders 4¼-inch bore by 4¾-inch stroke. All pistons are carefully ground and "run in" with a belt to insure accurate fit. The silent running qualities of the car are made possible by the perfect working of the motor, the careful adjustment of all parts and the muffler arranged longitudinally beneath the side of the car. The steering is through worm and nut mechanism, and has been thoroughly tested, and every possible weakness strengthened in order to insure absolute safety in this all-important part. A few of the other features are the careful balancing of parts, transmission, brakes, bevel gear drive, axles, etc. We invite your further inquiry.

MODEL "B," PRICE $650, is our familiar Standard runabout with various new features. Speaking of the runabout, did you notice the record of one of these machines made in the economy test of the New York Motor Club? Although it did not win on gasolene consumption because it was not run through the test at a very moderate rate of speed, purely for the purpose of cutting down the consumption of gasolene, it did make the best showing of any car in the matter of repairs, and demonstrated its ability to cover country roads under a load of four people at a good average speed. There was not a breakage of any part during the trip of 682 miles, and the car was universally commented upon as being the car which was always ready to start every morning with a turn of the crank. We would like to have you investigate this further.

The Oldsmobile exhibit at the Lewis & Clark Exposition was awarded a gold medal, the only award made an automobile exhibit by the Exposition authorities.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K2 Model L.... Traffic Cars....

Name .....

Address .....

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name .....

Address .....

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have MOTOR TALK, a magazine devoted to automobiling, sent to me for 1 year. K3

Name .....

Address .....

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Rambler Cars of steady service for 1906

IN SELECTING our line for the coming season it was early decided that Surreys, Types One and Two, were beyond any question of retirement and that but few improvements were possible. Therefore, these models with some slight alterations will be continued. To these are added Type Three, which is practically an elaboration of Type One, the power plant and chassis remaining the same, except somewhat lengthened to accommodate a larger and longer body.

These models are equipped with the tried and proven Rambler power plant, comprising our double opposed motor and planetary pattern transmitting gear, and are too well known to the trade and public to require extended description at this time.

Prices: Type One $1,200, Type Two, $1,650, Type Three $1,350, all with full equipment of lamps, horns, tools, etc.

"The Latest of the Ramblers," the strictly 1906 product, comprises four models. Model fourteen is a modern medium weight touring car equipped with a four-cylinder vertical motor 20-25 horse power, with sliding type transmitting gear, giving three forward speeds and reverse.

Final drive is by propeller shaft and bevel gear to the differential on the rear axle.

A notable feature is the method of connecting and bracing this shaft in which the universal joint is at the forward end and is entirely enclosed, running in an oil bath.

The external design is along most modern lines, with a wheel base of 106 inches.

The selling price of this model is $1,750 with complete equipment.

Model Fifteen is a heavier car with similar but more powerful equipment, the motor being 35-40 horse power and the final drive by individual chain to each rear wheel. The body is practically the same as in Type Fourteen but longer and larger, the wheel base being 112 inches. Price, $2,500.

Model Sixteen is a most luxuriously appointed Limousine on the Model Fifteen chassis, selling at $3,500.

The Rambler runabout for 1906 is a fitting heir to the reputation gained by the earlier Ramblers of this type. It is equipped with a double opposed motor of 10–12 horse power, placed longitudinally in the frame and driving through the Rambler planetary gear. As a Runabout with 3 inch tires it will sell at $800 and with detachable tonneau and 3 1-2 inch tires at $950.

Catalogue and full descriptive matter will be mailed upon request, but a careful personal examination of these cars at our various branches and agencies, will convince you that whatever may be your requirement, in service or price, the Rambler is the car you need.

Thos. B. Jeffery & Co.

Main Office and Factory. - - - - - Kenosha, Wis., U. S. A.

Branches:

Boston, 145 Columbus Ave. Chicago, 302-304 Wabash Ave. Philadelphia, 242 N. Broad Street.
Milwaukee, 457-459 Broadway. San Francisco, 10th and Market Streets.
New York Agency, 134 W. 38th Street. Representatives in all leading cities.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, November 30, 1905. No. 10

MATHESON BUYS A LICENSE

Elected to Membership in the A. L. A. M.—Two Others also Admitted, One an Importer.

Three new members this week joined the ranks of the Association of Licensed Automobile Manufacturers, viz.: The Matheson Motor Car Company and the Walter Automobile Company, who were elected to full membership, and the De Deitrich Importing Company to membership in the importing branch.

The Matheson Company, which shortly will shortly remove from Holyoke, Mass., to Wilkesbarre, Pa., obtained admission by purchase of the Selden licence, held by the Commercial Motor Company, under which the Walter Company had been operating. The Commercial Company, as may be recalled, is the evolution of the checkered Automobile Company of America, who formerly made the Gasmobile. The Walter Company produces the car of that name and is backed by American Chocolate interests. The De Deitrich Importing Company comprises a syndicate formed by Walter C. Allen, of the former firm of Allen, Halle & Co., who imported the Mercedes. The De Deitrich concern has just secured quarters on Fifth avenue, opposite Sherry's.

The three new licensees already have been alloted space in the Madison Square Garden show.

Old Hands in Big, New Company.

Detroit, Mich., is to be the location of one more automobile factory of magnitude. Although the company that will operate it is not yet fully formed, the plant is already in course of construction, and space in the name of H. H. Thorp has been secured in the "independent" show in New York.

The interested parties are Alex Malcolmson, the wealthy coal operator who is now treasurer of the Ford Motor Company, which office he probably will resign; W. G. Morley, formerly with the Olds Motor Works, and H. H. Thorp, formerly with the H. H. Franklin Manufacturing Company. While not definitely settled, it is likely that the new concern will be titled the Aérer Motor Company, after the French word signifying well aired, or well ventilated, and also characteristic of the four-cylinder air-cooled car which will be marketed.

That the new company means to do business on a large scale is indicated by the size of their factory. It will be of three stories, 400 by 52 feet.

Philadelphians Get Hill's Lock Valve.

E. Hill, Jr., Norwalk, Conn., has placed the sole American agency for the Hill gasolene lock valve with Janney, Steinmetz & Co., Philadelphia, who will, of course, now market that useful and ingenious device. Mr. Hill's interests in the Norwalk Iron Works left him insufficient time to devote to the lock valve, but notwithstanding its sale has been remarkable, having mounted well up into the thousands.

Fire Destroys Amesbury Bodies.

Fire destroyed the woodworking shop of Haywarth & Rogers, Amesbury, Mass., last Saturday night, 25th inst., causing a loss of $25,000, with $20,000 insurance. The fire is believed to have started from spontaneous combustion. The building was filled with automobile and carriage bodies, of which the firm makes a specialty.

Schwartz Buys into Wayne.

Arthur E. Schwartz, formerly of the firm of W. M. S. Schwartz & Co., of Paris, France, has purchased an interest in the Wayne Automobile Co., of New York. Mr. Schwartz is a graduate of the Vienna Institute of Technology, and has had a number of years' experience in automobile construction abroad.

Olds's Orders Near Two Million Mark.

It is announced on authority that up to Tuesday night, November 21, orders amounting to $1,800,000 have been booked by the Olds Motor Works for their 1906 product. It is naively added that the agents' convention was one of the most successful they ever held.

Chicago Plant Changes Hands.

The plant and buildings of the bankrupt Chicago Motor Vehicle Co. have been conveyed by trustee to Jacob Newman, of Chicago. The consideration was $35,000.

FULL HOUSE AT GARDEN

Those Who Secured Space at A.L.A.M. Show—Scenic Artists to Make Garden Bloom.

In all, the Association of Licensed Automobile Manufacturers have allotted space to 220 exhibitors in the show in Madison Square Garden, New York, January 13 to 20. There are twenty-one others on the "waiting list."

The only unlicensed cars admitted are the electrics, which will be "segregated" in the restaurant, or exhibition hall, as it will be styled for the occasion. This disposes of the report that the White steam car would be in evidence.

Reports of the beauty of the setting of the show continue to percolate, but its exact character is carefully guarded. It is known that a large number of scenic artists are at work on the "staging." One man in position to know let fall this interest-sharpening remark:

"It will be the most beautiful show ever held in the Garden, bar none."

The following is the list of those who have secured space and the numbers of the spaces alloted, which, however, cannot be regarded as final until the acceptances are received:

Main Floor.

No. 1, J. Stevens Arms & Tool Co.; 2, Walter Automobile Co.; 3, Apperson Bros. Automobile Co.; 4, Cadillac Motor Car Co.; 5, Royal Motor Car Co.; 6, Waltham Manufacturing Co.; 7, Northern Manufacturing Co.; 8, Pope Manufacturing Co.; 9, Elmore Manufacturing Co.; 10, Olds Motor Works; 11, H. H. Franklin Manufacturing Co.; 12, Electric Vehicle Co.; 13, Buick Motor Co.; 14, Sidney B. Bowman Automobile Co.; 15, Smith & Mabley, Inc.; 16, American Darracq Automobile Co.; 17, Decauville Automobile Co.; 18, Hollander & Tangeman; 19, Auto Import Co.; 20, George N. Pierce Co.; 21, Packard Motor Car Co.; 22, Autocar Co.; 23, Peerless Motor Car Co.; 24, Pope Motor Car Co.; 25, Winton Motor Carriage Co.; 26, E. R. Thomas Motor Co.; 27, Haynes Automobile Co.; 28, Smith & Mabley Manufacturing Co.; 29, Knox Automobile Co.; 30, Studebaker Automobile

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Co.; 31, Locomobile Company of America; 32, F. B. Stearns Co.

Exhibition Hall.

No. 33, Hewitt Motor Co.; 34, Buffalo Electric Carriage Co.; 35, Studebaker Automobile Co.; 36, Vehicle Equipment Co.; 37, Columbus Buggy Co.; 38, Cantano Electric Tractor Co.; 39, Matheson Motor Car Co.; 39a, De Dietrich Importing Co.; 40, Pope Motor Car Co.; 41, Electric Vehicle Co.; 42, Gallia Electric Carriage Co.

Basement.

No. 43, Studebaker Automobile Co.; 44, Vehicle Equipment Co.; 45, Pope Motor Car Co.; 46, Pope Manufacturing Co.; 47, Electric Vehicle Co.; 48, Hewitt Motor Co.; 48a, Buick Motor Co.; 49, Olds Motor Works; 50, Knox Automobile Co.

Elevated Platform and First Tier Boxes.

No. 51, The Diamond Rubber Co.; 52, The Hess-Bright Manufacturing Co.; 53, The Goodyear Tire & Rubber Co.; 54, C. F. Splitdorf; 55, G. & J. Tire Co.; 56, Gray & Davis; 57, The Veeder Manufacturing Co.; 58, Hyatt Roller Bearing Co.; 59, The Whitney Manufacturing Co.; 60, Brown-Lipe Gear Co.; 61, Pennsylvania Rubber Co.; 62, Motsinger Device Manufacturing Co.; 63, Baldwin Chain & Manufacturing Co.; 64, Firestone Tire & Rubber Co.; 65, The Steel Ball Co.; 66, National Carbon Co.; 67, Byrne, Kingston & Co.; 68, Warner Instrument Co.; 69, New York & New Jersey Lubricant Co.; 70, Springfield Metal Body Co.; 71, The Manufacturers' Foundry Co.; 72, Briscoe Manufacturing Co.; 73, International A. & V. Tire Co.; 74, Parish & Bingham Co.; 75, McGlehan Manufacturing Co.; 76, Oliver Manufacturing Co.; 77, The Utility Co.; 78, The R. E. Hardy Co.; 79, Spicer Universal Joint Manufacturing Co.; 80, F. H. Wheeler; 81, Atwater Kent Manufacturing Works; 82, Motor Car Specialty Co.

No. 83, Morgan & Wright; 84, Phineas Jones & Co.; 85, Jones Speedometer; 86, The Swinehart Clincher Tire & Rubber Co.; 87, Shelby Steel Tube Co.; 88, Light Manufacturing & Foundry Co.; 89, Brennan Manufacturing Co.; 90, Warner Gear Co.; 91, Atwood Manufacturing Co.; 92, Herz & Co.; 93, R. E. Dietz Co.; 94, Timken Roller Bearing Axle Co.; 95, Twentieth Century Manufacturing Co.; 96, Pittsfield Spark Coil Co.; 97, The American Ball-Bearing Co.; 98, The Standard Welding Co.; 99, Aurora Automatic Machinery Co.; 100, Wray Pump & Register Co.; 101, The Autocoil Co.; 102, The Badger Brass Manufacturing Co.; 103, The Fisk Rubber Co.; 104, The Dayton Electrical Manufacturing Co.; 105, The Whitlock Coil Pipe Co.; 106, Rose Manufacturing Co.; 107, Midgley Manufacturing Co.; 108, The Hartford Rubber Works Co.; 109, The B. F. Goodrich Co.; 110, Continental Rubber Works; 111, The Chandler Co.

Balcony and Second Tier Boxes.

No. 114, Edward Smith & Co.; 115, National Battery Co.; 116, C. Billy; 117, M. Soffan (Hercules Tire); 118, Harry A. Allers & Co.; 119, Auto Brass & Aluminum Co.; 120, Roth Jack & Tool Co.; 121, Anderson Spark-Plug Co.; 122, A. H. Funke; 123, Patterson, Gottfried & Hunter, Ltd.; 124, Motor; 125, L. J. Mutty Co.; 126, The Auto Supply Co.; 127, Motor Age; 128, The Midvale Steel Co.; 129, The Wm. Cramp & Sons Ship & Engine Building Co.; 130, Thomas Prosser & Son; 131, Bethlehem Steel Co.; 132, Horseless Age; 133, Rushmore Dynamo Works; 134, The Way Muffler Co.; 135, Judson & Downing Co.; 136, The Motor Way; 137, The Duff Manufacturing Co.; 138, E. J. Willis Co.; 139, Charles E. Miller; 140, Trade Advertising & Publishing Co.; 141, Columbia Lubricants Co. of New York; 142, Dac Automobile Supply House; 143, The English & Mersick Co.

144, The Motor World; 145, Michelin Tire American Agency, Inc.; 146, Samson Leather Tire Co.; 147, the Continental Caoutchouc Co.; 148, the Motor Car Equipment Co.; 149, The Automobile; 150, Leon Rubay; 151, the Meyrowitz Mfg. Co.; 152, Albert Champion Co.; 153, New York Sporting Goods Co.; 154, the Post & Lester Co.; 155, the Republic Rubber Tire & Shoe Co.; 156, Barnes Gear Co.; 157, the Noera Mfg. Co.; 158, Lackawanna Leather Co.; 159, F. W. Ofeldt & Sons; 160, the Imperial Brass Mfg. Co.; 161, Sibley & Pitman; 162, Gas Engine & Whistle Co.; 163, Witherbee Igniter Co.; 164, the Semi-Dry Battery Co.; 165, Vacuum Oil Co.

Concert Hall.

167, Pantasote Co.; 168, the Sprague Umbrella Co.; 169, Standard Roller Bearing Co.; 170, Consolidated Mfg. Co.; 171, Iron Clad Mfg. Co.; 172, Republic Rubber Co.; 173, the Gilbert Mfg. Co.; 174, the Schwarz Wheel Co.; 175, Wheeler Mfg. Co.; 176, American Electric Novelty & Mfg. Co.; 177, Belden Automobile Transmission Co.; 178, McCord & Co.; 179, Edmunds & Jones Mfg. Co.; 180, A. W. Harris Oil Co.; 181, Valentine & Co.; 184, S. F. Bowser & Co.; 185, Prest-O-Lite Co.; 186, Gabriel Horn Mfg. Co.; 187, Remy Electric Co.; 188, the Lunkenheimer Co.; 189, Weed Chain Tire Grip Co.; 190, Chicago Battery Co.; 191, Holly Bros. Co.; 192, the Webb Co.; 193, Hartford Suspension Co.; 194, C. T. Ham Mfg. Co.; 195, Eastern Carbon Works; 196, Diamond Chain Mfg. Co.

Balcony.

198, Hatch & Brittin, Inc.; 199, National Sales Corporation, 200, Horace E. Fine; 201, Heinz Electric Co.; 202, A. R. Mosler & Co.; 203, Manhattan Storage Co.; 204, Hydraulic Oil Storage & Distributing Co.; 205, H. & F. Mesinger Mfg. Co.; 206, E. M. Benford; 207, Railway Appliances Co.; 208, The Ventilated Cushion Co.

Basement.

209, Cooper Hewitt Electric Co.; 210, the Carpenter Steel Co.; 211, American & British Mfg. Co.; 212, Henry Hooker & Co.; 213, Springfield Auto Top & Upholstering Co.; 214, New York Carriage Top Co.; 215, Automobile Top & Cover Mfg. Co., Inc.; 216, Michigan Steel Boat Co.

H. W. Durphy has been appointed manager of the Electric Vehicle Company's Chicago branch. He succeeds Frank Fanning.

The Week's Incorporations.

Mamaroneck, N. Y.—Suburban Automobile & Garage Co., under New York laws, with $25,000 capital. Corporators—N. J. Haines, A. Greenwood and N. D. Lawton.

St. Louis, Mo.—St. Louis Automobile Company, under Missouri laws, with $10,000 capital. Corporators—Henry B. Graham, William F. Bagnell and James E. Morse.

Newark, N. J.—Calvert-Zusi Auto Company, under New Jersey laws, with $20,000 capital. Corporators—Charles S. Calvert, Leonard P. Zusi and Edward usi.

Detroit, Mich.—Walker Motor Car Company, under Michigan laws, with $300,000 capital. Corporators—Samuel M. Smith, Charles L. Walker and Oscar M. Springer.

Brooklyn, N. Y.—Private Garage, under New York laws, with $2,000 capital. Corporators—Charles H. Hyde, Samuel K. Kellock, A. Elmore, M. McDonald and John F. Meader.

New York City, N. Y.—Triumph Motor Car Agency, under New York laws, with $15,000 capital; to deal in automobiles. Corporators—C. E. Zimmerman, O. C. Carpenter and H. P. Heath.

Fort Worth, Tex.—Fort Worth Automobile Company, with $10,000 capital. Corporators—M. R. Sanquinet, A. B. Wharton, C. D. Reimers, W. W. Sloan, Jr., and F. R. Hedrick.

Buffalo, N. Y.—The Babcock Electric Carriage Co., under New York laws, with $100,000 capital; to make automobiles. Corporators—Frank A. Babcock, Frank L. Bapst and Harry Yates.

Los Angeles, Cal.—Success Automobile Company, under California laws; capital not named. Incorporators—H. M. Gorham, J. J. Davis, T. H. Dudley, E. M. Hills, C. I. Bundy and E. P. Brinegar.

New York City, N. Y.—American Generator Company, under New York laws, with $100,000 capital; to manufacture vehicles and motors. Corporators—H. C. Cryder, Townsend Morgan and W. M. Seabury.

Boston, Mass.—Penn Auto Supply Co., under Massachusetts laws, with $10,000 capital; to deal in automobile supplies. Corporators and officers—H. W. Knight, president; W. J. Foss, treasurer; A. W. Knights, clerk.

Buffalo, N. Y.—McNaughton & DuBroy, Inc., under New York laws, with $10,000 capital; to make motors, engines and automobiles. Corporators—James McNaughton, F. Louis DuBroy and M. D. Ashford.

New York City, N. Y.—Correspondence School of Automobile Engineering, under New York laws, with $30,000 capital. Corporators—Ranson E. Olds, Raymond M. Owen, Victor Lougheed and Robert H. Montgomery.

Rochester, N. Y.—McKinley Motor Car Co., under New York laws, with $20,000 capital; to manufacture and deal in automobiles. Corporators—Stanley R. Snook, Alfred H. Sowers, Elwood H. Lapp and George H. Smith.

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FOR CREDIT PROTECTION

Jobbers and Accessory Makers Join Hands for the Purpose—Scope is National.

The Automobile Trade Credit Association, which, as its name suggests, is a co-operative effort on the part of its organizers for credit protection, was brought into being in New York yesterday forenoon. It was the outcome of an informal meeting held about a week previous. At the meeting, which was held in the rooms of the Crockery Trades Association—a similar credit and collection bureau—F. J. Alvin, of the American Electrical Novelty Co., occupied the chair as provisional president. Others present were E. J. Willis, New York; G. W. Nock, Philadelphia; J. E. Murray, New York Sporting Goods Co.; H. B. Meyrich, National Electric Supply Co., Washington, D. C.; L. L. Halley, Sibley & Pitman; L. C. Burnet, Hartford Suspension Co., New York; A. H. Strickland, National Car Wheel Co., New York; F. A. Lemal, Continental Caoutchouc Co., New York, and A. F. Randolph, Spicer Universal Joint Co., Plainfield, N. J.

The president further stated that he had assurances of support and in many instances proxies from about twenty other accessory concerns, among them the Excelsior Supply Co. and the Beckley-Ralston Co., of Chicago; the Hartford Rubber Works and Post & Lester, of Hartford, Conn.; Briscoe Mfg. Co., Detroit; National Carbon Co. and Parish & Bingham Co., Cleveland; R. E. Dietz & Co., New York; Hess-Bright Co., Philadelphia; Pennsylvania Rubber Co., Jeanette, Pa.; Swinehart Tire & Rubber Co., Akron, Ohio; Auto Supply Co., Chicago; Herz & Co., New York; Acetylene Gas Illuminating Co., New York; Packard Electric Co., Warren, Ohio; Noera Mfg. Co., Waterbury, Conn.; Auto Top & Cover Co., New York; Jersey Brake Co., Newark, N. J.; Sprague Umbrella Co., Norwalk, Ohio; Gray & Davis, Amesbury, Mass.; Jones Speedometer Co., New York; Veeder Mfg. Co., Hartford, Conn.; Atwater Kent Co., Philadelphia; Pittsfield Spark Coil Co., Pittsfield, Mass.; Motor Accessory & Supply Co., New York, and others. A communication was also received from President Chapin of the Motor and Accessory Manufacturers expressing the good wishes of the latter for the success of the new association and also inclosing a complete list of the members of his own body.

This and a number of other letters were read for the benefit of those present by Franz Neilsen, an attorney, acting provisional secretary. A short discussion as to the various forms of dead beats and chronic kickers ensued, and was followed by a reading of the proposed bylaws and constitution, which were adopted with slight amendments suggested by the experience of different members.

The association is patterned after others of a similar nature that have been established in kindred trades for several years and have proved very successful, and its only object for existence is the collection of credit information, dunning bad debtors and the like.

In order to avoid the liability attendant upon its incorporation as a membership organization or one not for profit, under the laws of the State of New York, it is to be organized as a corporation to do business for profit, with a capital stock of $1,000 divided into 200 shares of $5 each. But one share is to be allotted to any member. The initiation, to be waived in case of charter members, is $10, and dues $40, payable semi-annually. In case of dissolution the capital stock is to be refunded, it being expressly stipulated that the certificates are not negotiable except by the consent of the association.

The following directors were elected: For three years from January, 1906, the date of the annual meeting, F. J. Alvin, E. J. Willis and G. W. Nock; for two years from the same date, J. E. Murray, New York Sporting Goods Co., and L. L. Halley, Sibley & Pitman, New York; for one year, Carl Kaufman, the Motor Accessory and Supply Co., New York, and H. B. Meyrich, National Electric Co., Washington, D. C. The power of electing officers devolving upon the board of directors by the terms of the constitution, a subsequent election was held, resulting in the choice of F. J. Alvin, president; L. C. Burnet, treasurer, and Franz Nielsen, No. 80 Wall street, secretary and counsel. Mr. Neilsen serves an electrical trade credit association in the same capacity, and in consequence "knows his book."

It was decided that in order to make the association national in its scope, instead of purely local, four vice-presidents be chosen, three of whom should be identified with the trade in other cities, such as Detroit, Boston and Chicago. Selection of these officers was deferred until such time as the association membership shall have increased to a point where they shall be representative of the trade in their sections of the country. It is anticipated that the membership will be increased to one hundred or over at the coming New York shows.

Witherbee Gets Larger Factory.

The Witherbee Igniter Co. is to-day removing from its Thames street address to its new factory at 541 West 43d street, New York. The new building is of five stories and will afford the Witherbee people facilities for the production of 1,000 storage batteries per week.

Miller now Meeting American Prices.

Charles E. Miller, the New York importer of Brampton chains, is now meeting the quotations of the American manufacturers. He did so well with the Brampton that he was able to place an order of such magnitude as permits of the price reduction.

Locomobile Men Go Abroad.

A. L. Riker, vice-president, and A. L. Schulz, chief designer, of the Locomobile Co. of America, sailed to-day for Paris to visit the automobile show. Joseph Tracy sailed on the same steamer, the Kaiser Wilhelm der Grosse.

MEXICO'S FIRST FACTORY

Government Grants Brown Big Concession—His Plans Suggest Even Tire Manufacture.

Mexico, the land of sage brush, chaparrell, sand dunes, cacti and lizards, is to have a "mammoth automobile and bicycle factory." It is to be established in Mexico City. The Motor World gave space to the earlier reports of the project and it now appears that the concession, which carries with it many privileges and franchises, has been granted by the Mexican Government to L. C. Brown and his party of St. Louis (Mo.) capitalists, whoever they may be.

Judging from the following extract from a Mexican paper Mr. Brown has done his advance work well:

"The Mexican Automobile and Bicycle Manufacturing Company is now being incorporated in the United States to exploit the concession, and the company expects to begin the construction of its factory within a short time. The large amount of capital that will be expended on the construction and equipment, according to the concession, indicates that the company proposes to erect one of the largest plants in the world, as it will have the capacity of turning out about ten automobiles and as many or more bicycles per day.

"Mr. Browne said that the factory is to be erected in the vicinity of this city and the equipment, all of which will be electrically driven, will be as complete as money can supply, and that nearly every part of the machines will be built in the factory here from the raw material.

"Though nothing definite is announced on the point, it is understood that even the tires will be made here and from a native material. It is also understood that the car bodies will be constructed of aluminum, to be supplied by the company recently organized to manufacture that article in the republic.

"A finely equipped repair shop is projected in the plan of the factory. Expert repair men will be brought here from abroad.

"The personnel of the Mexican Automobile and Bicycle Manufacturing Company includes some of the most prominent and wealthy men of the city, which is good assurance that the industry will be one of the most important that has ever been established in Mexico.

"When the industry is established the people of the republic will be able to obtain the highest grade machines at a cost very greatly reduced over what they are now compelled to pay, says Mr. Browne. Besides this, the purchaser will have no high duty or transportation charges added to the cost of his machine and he will have an opportunity of seeing and trying it right here at home before purchasing."

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SO EASY, SO RELIABLE, SO SATISFACTORY, SO SAFE, SO DURABLE—
SO DIFFERENT

is the verdict of all users of

FISK
MECHANICALLY FASTENED TIRES

Make your automobile run smoothly—to your mental, as well as your physical, satisfaction—and maintain it economically by equipping it with FISK TIRES.

They have an individuality of design—recognized by every experienced driver to-day as being in every way superior; a nicety of workmanship—that works wonders where wearing qualities are considered; and a design that is veritably "an accident insurance."

You cannot appreciate what can be recorded of these tires on a car until you have personally "tried them out."

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:

NEW YORK, 754 Seventh Ave.
BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Bridge St.
PHILADELPHIA, 138 N. Broad St.
MINNEAPOLIS, 704 Henepin Ave.
ATLANTA, 103 N. Pryor St.
SYRACUSE, 423 S. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 818 Euclid Ave.
LOS AGELES, 1034 Main St.
DETROIT, 254 Jefferson Ave.
CHICAGO, 1251 Michigan Ave.
KANSAS CITY, 1330 Main St.
ST. LOUIS, 3908 Olive St.
SAN FRANCISCO, 114 Second Ave.

YOU CAN DEAL WITH US FROM A DISTANT POINT THE SAME AS AT THE FACTORY.

CADILLAC SALABILITY

The following letter was recently received from the Wm. Galloway Co., one of the principal Cadillac dealers in the State of Iowa.

WATERLOO, IOWA, Nov. 6, 1905.

CADILLAC MOTOR CAR CO., Detroit, Mich.

GENTLEMEN:—We have just wound up our automobile season and in this connection wish to say that the trade has gone way beyond our expectations. The facts of the case are, we got all the trade there was in the town and around here.

Now, as I tell my customers, it is not because they are buying machines from us that we are doing such a big business. It is simply the machine. The Cadillac automobile is *right*. You have struck the happy medium. The trouble with the average man who buys an automobile is he is misled and thinks unless he buys a car with two cylinders and rated at from 16 to 40 horse power he will not get a satisfactory machine. This is exactly where he is mistaken. I was mistaken myself in this same way, because when I first got the automobile fever no man could make me believe anything was right but a double cylinder; but my mind has been changed and changed radically since I have handled the Cadillac.

What more does a man want than on automobile that will take him any place he wants to go, faster than he cares to ride, and will positively handle mud, sand and roads in a manner that machines of three times the horse power cannot touch? This is exactly our experience with the Cadillac automobile. We sold twenty carloads of them this year with not one single dissatisfied customer, and fully expect to sell 120 machines this coming season, but will only place our order for 50 as a starter.

I will tell you what sells Cadillac automobiles. First, it is the men who own Cadillacs telling their friends, and Second, the machine itself. I consider it the most valuable automobile agency in America without a single exception.

Very truly yours,
THE WILLIAM GALLOWAY CO.

Dictated by WM. GALLOWAY.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers

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Those who are interested in motor vehicles will find the facilities and information of our office always at their command.

To Facilitate Matters Our Patrons Should Address us at P. O. Box 649.

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NEW YORK, NOVEMBER 30, 1905.

THE

NEW YORK

SHOW NUMBERS

of

THE MOTOR WORLD

Will Bear Dates

January 9th and 16th.

As always, they will deal with the subject intelligently and well and be thoroughly representative of the industry.

"Enclosed find my check for which please renew my subscription to the Motor World. I think I get about all the leading publications, but when I want the latest news first I get it from the Motor World."—W. E. Rudy, Lima, Ohio.

Concerning Kerosene as a Fuel.

While, for obvious reasons, foreign manufacturers have long been striving, more or less sucessfully, for carburetters that will permit of the use of alcohol, it is a trifle odd that American makers have devoted practically no attention to kerosene as a fuel.

Waving aside all questions of heat units, thermal efficiency and similar technicalities, we all know that kerosene long has been successfully employed for boat propulsion, and the average automobilist who has on occasion been "put to it" while his engine yet retained its heat, knows as well that the same fuel has admirably served in the emergency.

Knowing all this, it would seem that the purely commercial advantages of kerosene should merit for it far more attention than it has received. Its abundance, its low price, its practically universal availability, its comparative safety—each and all of these factors are of more than passing influence and importance. They make for safety and economy in every department, economy not alone in the operating of the car, but in its sale or handling, for the item of insurance as it is affected by gasolene is not a small one, and is felt by manufacturer, dealer, owner and even by the dealer's neighbors and the owner's also.

It would also appear that the use of kerosene would be of influence in the increase of export trade; for it is in the far away countries that gasolene is scarce and its price steep. The use of gasolene propelled automobiles in such countries is an expensive luxury and an uncertain one, as, for instance, in Panama, where the owner of one wrote the Motor World that he for several weeks had been unable to use his car because gasolene was not available and the arrival of the next ship was sometime removed.

Of course, ready starting with kerosene is the chief stumbling block, or the only one. If it were possible to readily and quickly supply the requisite amount of heat necessary to immediately generate the gas all would be easy. The advantages that would accrue from it appear great enough and sufficiently far reaching to merit more serious and more general inventive effort to attain that end. Economy and safety are worth striving for to the end of time.

How Weight and Price Compare.

Probably it is because the automobile has been evolved and not designed by engineers, as many skeptics are at considerable pains to explain, and because, by the same token, the men who have been responsible for its development have been too much occupied with the labor of perfecting its mechanical details to delve into theory far enough to deduce formulae and ratios of a general nature, that the field is singularly barren of the sort of data which is to be had in other lines. Thus, the ratios which have been used for many years in the development of the steam engine, the weight per horse power for any given type, the fuel consumption, and the first cost, as well as the costs of maintenance and operation, have no exact counterparts, either in the hand books of the automobile designer or the memoranda of the salesman.

Material of this sort represents the result of a careful study of machinery which has been refined to a point where a uniform performance may be expected of any unit under normal conditions. It serves the designer as a criterion of the relative proficiency of his own product as compared with that of other designers. It serves the purchaser as a basis upon which he may exactly formulate his needs and determine at the outset just what sort of machine will be necessary to perform the work which he has to be done.

In the automobile field it is too early, for the most part, to expect authentic data of this sort in regard to the final performance of motors and complete machines. Certain ratios of weight to horsepower and carrying capacity have been worked out, but there is as yet hardly sufficient settlement of the questions involved to permit them to be considered as final. Thus, although a year ago, the proportion of one horsepower for every hundred pounds of weight in the car was considered as well established practice, the new year will see several cars in which this ratio is greatly reduced, and in at least one instance nearly cut in half.

One point, however, which is of paramount interest to both sides of the market, still vague and variable as are all other considerations in the trade, seemed last year to be approaching a settlement. That is to say, the ratio of cost to weight, though widely divergent throughout the whole range of the machines offered at the beginning of this season, yet showed a conformity to a certain standard throughout the range of medium priced cars, which was truly remarkable, when considered merely in the light of a coincidence, and which, taken as an indication of a trend, following along natural lines, pointed to a definite average rule. Thus, of the sixty-one cars priced within the limits of $1,200 to $2,000, which were staged in Madison Square Garden last January, no less than seventeen, or 28 per cent, of the entire num-

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ber were assigned weights by their makers which made the cost figure out a dollar a pound. The average cost of the entire number, taken on the same basis, was 97 cents per pound, but slightly less than the dollar rate.

In the range of the low priced cars of the runabout order the cost per pound was considerably less on the average, running down to 75 cents in one instance, while among the more elaborate productions in which nothing was sacrificed to excellence and luxury in mechanism and fitting, the cost was considerably greater, running as high as $2.60 in one case.

It is not irrational to suppose that since the weight of the car has a definite relation to the capacity, and since the cost of manufacture and sale can be reduced to terms of the weight also, that such a ratio can be definitely evolved in process of time. Also, the same value may be expressed in terms of the carrying capacity of the machine, so that ultimately the purchaser may inform himself of the probable cost of a machine for any sort of duty, so long as it be of standard construction.

The crusade for more power and less weight per horsepower which is being waged this year, with the reduction in price of certain standard types of machine for popular use, are not unlikely to work together to keep the cost per pound very nearly constant, certain of the cheaper grades of car running below the average, and certain other types designed more luxuriously exceeding it by an amount which is dependent upon the degree of their elegance. Of course, it is impossible to make an fair estimate of the result which will be revealed during the coming Winter, but it is safe to assume that this result will not materially affect the figure which has held good this year for the majority of medium priced cars of standard construction.

To adjust the right height of the gasolene at the jet, says one of those "rocking chair" advisers, speaking of a carburetter, weight the float equally—that is to say, so that it will retain its erect position—with solder until the gasolene stands in a bead on the top of the jet without overflowing. This is the best height for efficient working. All of which is very well by way of experiment, but do not place too much faith in the rule, as not all carburetters have the same working level, and the result might be a permanent flooding of the cylinders with a mixture too rich to burn.

AT THE AUCTION SALE

"Grand Manufacturers' Clearance" Lacking in Grandeur—Auctioneer the Real Feature.

"If you're here to buy cars I'm here to sell them; not to answer questions," said the auctioneer at the 'grand manufacturers' and agents' clearing sale" at No. 309 West Forty-first street, New York City, Tuesday morning when the Motor World man asked him what manufacturer or agent was disposing of his stock. Further inquiries failed to reveal anything, and as a last recourse a grease-stained helper was appealed to. He said he did not know that any manufacturers or agents had a car in the place; that some of them belonged to the company—the West Side Auto Transportation Co. was on the sign over the door—and some of the cars had been brought in by individual owners to be disposed of at auction.

The Motor World man had, like one hundred and fifty others, been attracted to the place by the alluring advertisements in the daily newspapers, and wanted to "snap up" the "chance of a lifetime." There were plenty of chances, but the takers seemed to value their lifetimes. One of the chances came when a 1902 Oldsmobile was put up. It was probably the auctioneer's fault that it was not sold. He said he did not know whether it would run; in fact, he did not know if it even had an engine in it. When an inquisitive small boy "nosed" around to find the motor he was gently informed that his presence was not desired. Exit small boy.

Excepting some of the old cars—relics they were—the most interesting thing in the establishment was the auctioneer. He was one of the persuasion who was recognized as a man with a past who had "done things" in the bicycle business years ago and who were recently mingled with Grinbergs, Morrises and others of the "storage set." Clothed in a frock coat and wearing a hat that was a cross between a derby and a "tile," he mounted each car in turn and extolled its virtues. Nobody seemed to care when he gave as the list prices of some of them, figures $200 or $300 above catalogue lists. He had the happy faculty of gazing at the ceiling and getting a bid therefrom. Several times when some venturesome soul with money to burn risked a bid at $100 the auctioneer would lift his eyes heavenward, or rather ceilingward, and sing out:

"Do I hear $200? Ah, yes. Thank, you."

Apparently there were numerous straw bids, so it is not known just how many cars were actually sold.

The first—a 1904 Stevens-Duryea—went for $370, and starting from $150 a last year's White steam car was finally knocked down for $500. A four cylinder side entrance Ford was bid up to $800. The auctioneer himself started the bidding on a 1905 Richard-Brasier at $3,500, and disposed of it at $4,300. An Olds runabout sold for $325. Some person timidly ventured $200 on a 1904 Marion, which the auctioneer said had just been overhauled at the factory and repainted. The man with the queer hat said he liked the bidder's nerve, but just to show him that the average New Yorker is no fool would accept the bid. Then the calls came fast and furious from apparently nowhere, until at last the person with the questionable hat said: "Sold at $650!" The bid on a 1904 Rambler, with canopy top, was not high enough to suit his highness, so it was pushed back in the corner. There were no bids on a Northern runabout, and a 1904 Cadillac, with tonneau, brought only $300. The auctioneer requested the crowd to go upstairs. Said he thought if they went up their bids might go up also. It was not so ordained, however.

A schoolboy—he must have been that, for he had a neat pile of books under one arm—ventured $50 on an old cobwebbed Gasmobile, and the bidding was quite spirited in $2.50 raises until it was knocked down for $80. A dusty steam delivery wagon—no one knew its name or pedigree—received two bids, $50 and $55, respectively. It was sold for the latter figure. A 1903 Olds runabout brought $200, and a 1903 Mors started at $700 and finished at $1,175. A Centaur electric runabout sold for $275, and a last year's Rambler was not bid on. The last machine offered was an unpainted electric brougham, minus batteries. No bids were offered. There were lots of other cars, but as the damp atmosphere seemed to have a depressing effect upon the bidders the sale was declared over.

Kansas City is "Coming On."

The Kansas City (Mo.) Motor Car Company has leased the property at 310 West Ninth street, on which it will erect a three-story building, to be used as its retail establishment. The estimated cost is $60,000. The company will also build three brick structures on the Independence road, Kansas City, where it purposes building motor cars.

Chauffeurs Join Teamsters' Union.

Chauffeurs of Los Angeles, Cal., believe that "where there is union there is strength," and have accordingly organized as the Automobile Drivers and Helpers. It will be a typical trade union, as the new club has allied itself with the International Brotherhood of Teamsters.

Deere-Clark Erecting Big Plant.

The recently incorporated Deere-Clark Motor Car Co. has already started to build its plant at East Moline, Ill. A one story building, 100x300 feet, is being erected at First avenue, near the Grinnell road.

Reid may Leave Detroit.

The Reid Mfg. Co., Detroit, Mich., manufacturers of the Wolverine car, are seeking a location for the removal of its plant. Elkhart, Ind., is contemplated.

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TIRE THAT FITS ITS TITLE

Goodrich's "Quick Detachable" Proves a Revelation—Just How it Works.

If the B. F. Goodrich Co.'s new Quick Detachable tire, as it is styled, does not score an immediate "hit," it will be surprising indeed. A sample tire reached the Goodrich branch at 1625 Broadway, New York, on Monday last and demonstrations amply proved that never was a tire more truly named. To see the tire removed from the rim in less than thirty seconds is a revelation; to see it attached, tightened and made ready for inflation in less than a minute—and all this without special effort—serves to heighten the wonder.

A clear idea of the mechanical details of the new method of fastening, as well as of the modus operandi involved in its use may be readily had by a glance at the accompanying photographic illustrations. In Fig. 1, which represents the rim stripped of all incumbrances, it will be noticed that this is of the usual clincher section, but is almost flat at one side, with the exception of a very slight retaining bead, which in no way impedes the entrance or exit of the tire to the hollow of the rim. At the left hand side of the rim, as shown in the illustration and within a fraction of an inch of the outer or unprotected edge, will be seen an opening of peculiar shape, extending along the rim for about two inches and going clear through the metal. About six inches below this and in a line with the opening referred to will be seen a small metal projection, while on the stand supporting the wheel and just to the left of the valve cover shown there, is a small piece of metal bent at right angles and having one end drilled with a half inch hole. These and the removable section of the rim shown leaning against the wheel in Fig. 2 comprise the fastening entire.

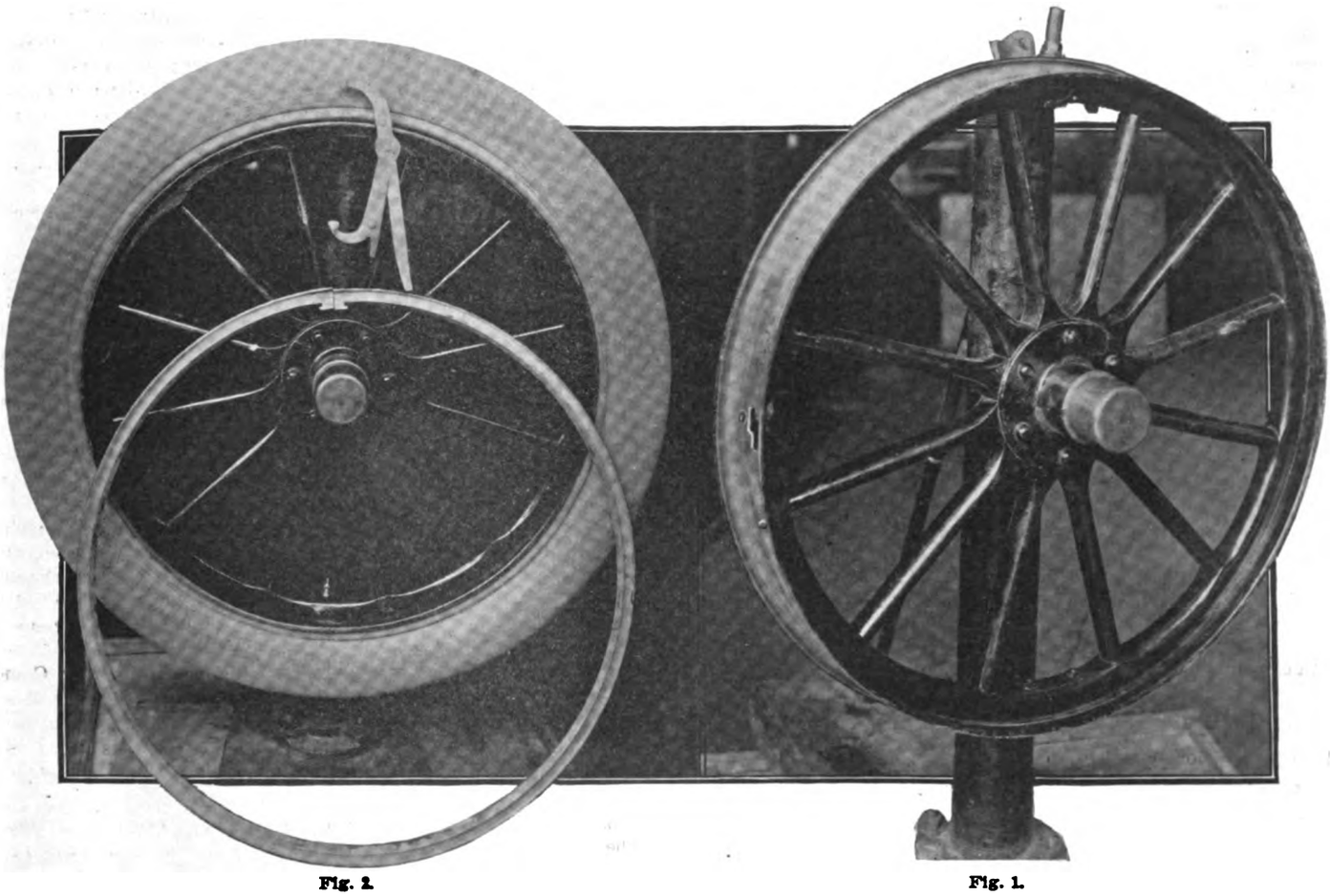


Fig. 2. Fig. 1.

Starting with the rim bare as illustrated the method of putting the tire in place ready for inflation is as follows: The valve stem is inserted through the corresponding hole in the rim, which is situated directly behind the opening already referred to in detail. One tongue of the removable rim section, as shown in Fig. 2, is then inserted in the left hand side of the latter opening and a recess in this movable piece is settled down over the small projection along the rim proper and about six inches below, as previously described. This prevents any lateral movement. The remainder of the removable section is then settled into place behind the raised bead extending around the entire wheel and which serves to grip it in place. This brings the other tongue of the latter opposite the opening which is so shaped as to permit of its insertion only by forcing the tire back on the rim for some distance and which can naturally only be done when deflated. After being inserted here it must be moved forward and outward a short distance to bring it into line with the other projection and the outside of the wheel.

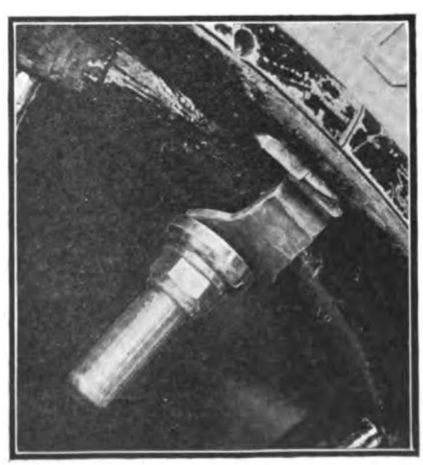


Fig. 3.

Both these projections then stick through the rim at a point that practically coincides with the center of the valve stem, but do not lie flush against the felloe. Here is where the small extra piece referred to comes in. By means of the hole mentioned it is slipped over the valve stem and forced behind the two tongues, the faces of the latter and that of the piece being so arranged as to tightly grip one another, the function of the piece

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being to hold the ends of the removable rim down, although one of these—the left hand one, as illustrated, cannot move in any direction and the other can only move inward, which is impossible except when the tire happens to be deflated. Further security is insured by screwing the valve cover home tightly on its seat. The appearance of the entire construction in place with the tire inflated is clearly shown in Fig. 3. The recess shown in the removable rim just to the left of the joint in this illustration is for the reception of one end of the tool shown in Fig. 2 leaning against the wheel. This is the only tool necessary and is employed merely to start the removable section or the tire itself from its bed after having been in place for some time. As described the operation of removing or replacing the tire ready for inflation may appear lengthy, but it is as a matter of fact quite the reverse and takes far less time than is necessary to explain it. In short, if facility for repair is a vital factor—and it is—then the Goodrich Co. has taken a giant's stride forward.

Features of Fosdick's Garage.

In the "Motordrome," as the Harry Fosdick Company, of Boston, style their establishment on Stanhope street, there are incorporated several innovations that make for advanced service.

The building itself is of brick, five stories high, the whole of which is occupied by the Fosdick company. The top floor, purposely inaccessible, is devoted to a machine shop, admission to which will be strictly limited to the workman. Chauffeurs will not be allowed there under any circumstances.

On the floor below is the tool and stock room, where spare parts and extra tires, etc., may be checked, for which a receipt will be given. This, as Mr. Fosdick laughingly explained, is to assure a customer that he will not be sold the same tire or part a second time. Part of this floor is used as a private garage, and will contain separate charging stations for electrics, etc. Space therein has already been secured by a couple of prominent Bostonians.

The third floor is the repository and salesroom proper, where new cars will be shown, and everything that will lend attractiveness to their display has been installed; chief among which are the arrangement of lights, which give a sort of picture gallery effect, being strung along the sides of the wall and shaded so that the light is thrown directly on the cars. On this floor also are the business offices, attractively finished in green and white.

On the second floor is the garage for regular "boarders," which contains expanding metal lockers and other conveniencies.

The ground floor is cemented. It has an entrance on Stanhope street and an exit leading to Dartmouth street and the automobile testing track. It will be used for washing, etc. In the cellar will be the electrical equipment for charging batteries, and a feature is to be made of the care of commercial trucks.

In the Retail World.

Percy H. Johnston & Co., Newark, N. J., have taken the agency in that city for the Grout car.

The Austin Automobile Company, Newark, N. J., has taken the agency for the Ford cars.

The Keystone Automobile Company, Pittsburg, Pa., has taken the agency in that city for the Ford cars for 1906.

Guy Carlton has started in business at 528 North Main street, Bloomington, Ill. For the present he will handle the Buick.

John Charter and Russell George have begun business at Sterling, Ill. They will handle the Thomas car and do a general storage and repair business.

Munsing & Chapman is the style of a new firm formed to handle the Grout cars in New York. They have established themselves in the fine new building No. 1,855 Broadway.

Fire last Wednesday, 22d inst., in the garage of Thomas Northway, at 92-94 Exchange street, Rochester, N. Y., did $1,000 worth of damage. Several cars were damaged by water.

Hecht & Friedman, who will operate as the St. Louis Motor Car Co., of New York, have established salesrooms at No. 1,843 Broadway. They will, of course, handle the St. Louis car.

The Kane-Champlin Company, Buffalo, N. Y., has taken possession of its new establishment at Tupper and Ellicott streets. The garage is two stories high and its dimensions 57x100 feet.

The L. C. Gilson Automobile Co., Portland, Me., has contracted for the erection of a modern garage at 883,889 Congress street. It will be one story high, with basement, and measure 100x100 feet.

These officers have been elected to serve the Automobile Transit Co., of La Crosse, Wis.: President, A. J. Stephenson; vice-president, Fred Hartwell; treasurer, Philip McMahon; secretary, Warren Brayton.

F. Blomberg is erecting a $25,000 brick garage on Madison street, Memphis, Tenn. It will be two stories high, triangularly shaped, measuring 110 feet on new Madison street and 110 feet on old Madison street.

S. F. Randolph, of the Autocar Company of New York, has disposed of his lease on the building which was being finished for him at 62d and Broadway, and will seek a new location on his return from Paris. He sails for the French metropolis on Saturday.

Charles E. Lane has purchased a 50-foot lot on the south side of Olive street, near Vandewater avenue, St. Louis, Mo., on which he will erect a modern fireproof garage, to cost $25,000. He will handle St. Louis and Reo cars.

A four-story and basement brick garage will be erected at 28-30 Howard street, Albany, N. Y., by the Albany Garage Company. The concern has taken the agency in that city for the Thomas, Peerless, Autocar and Stevens-Duryea cars.

The Jackson Automobile Company, Jackson, Mich., has established salesrooms in Newark, N. J., through which the New York, New Jersey and Pennsylvania output will be handled. The branch is in charge of C. W. Oathout.

The recently incorporated Douglas-Andrews Co., New York City, which has contracted for the entire output of Berkshire cars, will establish a garage in Pittsfield, Mass., before January 1. The Mills Building has been leased for the purpose.

The Newark Garage and Repair Company, recently incorporated, has purchased the livery stable property at 213-215 Clinton avenue, that city, and will remodel it to suit the required needs. George Paddock has been elected president, Leonard B. Zusie treasurer and Andrew Schwind secretary and general manager.

L. D. Morris & Bros., automobile dealers at Plainfield, N. J., will move into the brick building on East Fourth street, formerly occupied by a large manufacturing concern. The firm is negotiating for the purchase of the property and, if acquired, will remodel it as a modern garage.

Excavations at 5,909-'15 Center avenue, Pittsburg, Pa., the site for the new garage to be erected by the Hiland Automobile Co., began last week. The building will consist of two stories and basement, 88x115 feet. When completed, the building and real estate will have cost more than $50,000. It will be heated by steam and the plant will be complete in every detail. There will be a separate building for the storage of gasolene in the rear of the main structure. The floor space will occupy 21,000 feet. The offices will be on the first floor, reception rooms and air-tight glass-inclosed salesrooms on the second floor.

Special Plant for Automobile Products.

The Standard Roller Bearing Company of Philadelphia has purchased for about $100,000 the property of the Pennsylvania Iron Company at 49th and Merion avenue, which adjoins their present property.

The realty secured consists of a lot 95 feet wide by 200 feet long, including a four-story brick building. This gives the Standard Roller Bearing Company 926 feet facing upon the Pennsylvania Railroad main line near 52d street station, making a total of over five acres, with several factory buildings, having a total floor space of 145,000 square feet.

The Standard company will move their annular ball bearing and automobile axle department and brass foundry into this Pennsylvania Iron Works building in about thirty days.

The Standard Roller Bearing Company also recently purchased from the American Ice Company a plot of land adjoining their property on the east, upon which they are erecting a foundry for making crucible steel castings.

The factory for two years has been running day and night and is employing nearly one thousand hands.

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POINTS FROM PARIS

Prices, Light Cars, the Tire Test and Traffic Regulations all Subjects of Discussion.

Paris, Nov. 17.—The French makers have always prided themselves upon the exclusive character of their vehicles, and by catering for the wealthy classes are making a considerable profit out of the industry. While they could get high prices for big and highly finished cars they were not disposed to go in for the building of smaller and cheaper vehicles, upon which they would not get more than half the return with the same production. The popular type of car has been a little beneath them.

During the last year this somewhat supercilious attitude toward the cheap car has considerably changed as the result of new developments in the industry. As nearly all the firms had been specializing themselves in high priced cars, the supply has now fully met the demand, with the result that it is by no means so easy to get such big prices for cars as formerly. Several of the leading makers have found it necessary to revise their price lists and quote the new cars at lower figures. This is partly due to the competition of big engineering firms like Delaunay-Belleville, Hotchkiss and De Dietrich, who manufacture cars as a stop-gap and take up this branch of the business merely as a means of providing employment for their plants when not otherwise engaged. As the working costs are very low, they have it in their power to cut down prices whenever they find it to their interest to do so, and this is a standing menace to other firms who turn out nothing but cars and have therefore to take into account an exceptionally heavy working cost.

TENDENCY TOWARD LOWER PRICES.

This tendency toward the lowering of prices of high grade cars is being accompanied by a revival of interest in the popular car, which, beginning in the United States, where the runabout met with a good deal of success, has spread to England, and this popularity of the small car abroad has compelled French makers to look to this branch of the industry for fear that it will be monopolized by foreign manufacturers. Moreover, in this country also there is a strong agitation in favor of the cheap car among that almost unlimited class of buyers who feel that they have been waiting too long in the cold until makers should condescend to look after their requirements. For one buyer who will pay $3,000 for a car there are hundreds who are looking out for reliable vehicles that can be purchased for something less than $500, and there is no doubt that good little cars can be supplied for this figure. Of course, it is hopeless to expect to turn out cheap cars which are merely small imitations of the big vehicles, for in neither case can the quality of workmanship be sacrificed, and in proportion to the selling price the small car costs much more to produce than the big vehicle. The only way out of the difficulty, therefore, is to design special types of popular cars in which the mechanism is reduced to the simplest form possible.

Buyers have been stating their views through the motor press, from which it is clear that they have no particular preference for any type of mechanism so long as it is cheap and reliable. The popular car is not influenced by fashion in the same way as the big vehicle. The maker can employ any kind of engine and propelling gear, so long as the car gives satisfactory results, and having such a wide latitude in the designing of motors and transmissions there ought to be no difficulty in turning out suitable types of cheap cars. The only danger lies in little firms glutting the market with ramshackle affairs, as was the case five or six years ago when automobiling was thrown back by the disgust with which the public rejected the cars offered them. With the experience now gained in the industry, it may be hoped that this will not be repeated, and that the trade will settle down to types of little vehicles that will prove serviceable to their owners.

As a means of further stimulating this movement in favor of cheap cars a test of voiturettes is to be carried out this month, when we shall see what makers have already done in the way of catering for the unlimited demand for small cars. The example of Peugeot and Renault in designing light vehicles is having a good effect on the trade, and there is no doubt that 1906 will be chiefly remarkable for the revival of the popular car.

CARS FOR PROFESSIONAL USE.

Evidence of the growing use of the motor vehicle among people engaged in professional and business occupations is seen in the report which has just been presented by a member of the Extra-Parliamentary Commission of Inquiry upon the progress of automobilism during the last five years. In this country owners who use their cars for business are only required to pay one-half of the usual tax, and as their professions are given when declaring the vehicles a complete record is kept of the various occupations in which the motor car is regarded as an "instrument of work."

During the last four years the number of cars upon which the half tax is paid has been steadily increasing, until this year the 3,485 cars coming within this category represent 31.8 per cent of the total number of vehicles declared. One-third of this number—that is to say, 1,109 cars—are owned by doctors, and then come factory managers, engineers, architects, etc., with 359, followed by commercial travellers with 254. It is significant that nearly all the doctors using cars live in the country, and those in towns form only an infinitesimal proportion of the whole. It is strange that commercial travellers are not making a greater use of the motor vehicle, but this is one of the classes which are looking out for the cheap car which the trade is now preparing to supply. More than any one else the commercial traveller needs a car that is reliable as well as cheap, and he is hardly likely to spend a lot of money on a vehicle unless he is sure that it will prove a good investment. It is to be hoped that in the coming year the trade will bring suitable cars within reach of this as well as of other classes of would-be users who are anxiously waiting for a type of vehicle that will fully satisfy their requirements.

HOW THE TIRE RACE WILL BE RUN.

The details of the tire race have now been settled. The sporting commission of the Automobile Club of France had a great deal of difficulty in meeting the objections raised by the tire firms, who do not seem at all pleased at the idea of being required to take upon themselves the responsibility of a race. In the past they have been deriving enormous profit in the way of publicity from races in which car makers have had to bear the cost, and they can hardly gybe now at being invited to take part in a race organized specially for themselves, the more so as such a contest is expected to do a great deal in the way of improving the pneumatic tire. It is certain that the tire makers will have to exercise their ingenuity and experience in turning out the very best tires possible if they are to show up successfully in the race, for not only are they competing among themselves, but also with a category of solid tires and spring wheels which will for the first time be tested under exactly the same conditions as the pneumatic tires. Altogether the race promises to be unusually interesting.

The contest to be run off next year by the Automobile Club of France will be known as the Coupe du Bandage, or Tire Cup, and is limited exclusively to makers of wheels and tires of all kinds. Each maker will be allowed to enter a maximum number of four cars, for each of which a fee of $600 has to be paid. For entries that are received after February 15 the amount of the fee is doubled. The distance to be covered will be from 620 to 930 miles, and this may be run off in two daily stages, if necessary. The chassis must have a maximum weight of 1,200 kilos, with the usual tolerance of 7 kilos for magnetos. It must also carry a box to contain 400 kilos of dead weight behind the seats. The same systems of tires must be fitted to all four wheels.

The tires will be divided into two categories—that is to say, first, pneumatic tires, and second, all other kinds of tires and elastic wheels, or a combination of solid tires and springs. Each car will be allowed to carry four extra air tubes, which must be marked, as well as the tires on the wheels, and any repairs on the road can only be carried out by the driver and his mechanic with the tools on board. In sending entries the maker must forward a drawing of the tire, a complete tire, the parts which he wishes to have the option of changing during the race and a full description of the work and the time occupied in renewing such parts. The commission will inform the competitor if he will be allowed to change these parts, and if, in the event of the commission refusing to allow the parts to be changed, the maker

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The Men Who Sell the Oldsmobile.



THE OLDS' AGENTS GROUPED AT THE SPECIAL TRAIN WHICH CARRIED THEM FROM LANSING TO THE MICHIGAN-WISCONSIN FOOTBALL GAME AT ANN ARBOR.

wishes to withdraw he will have returned to him one-half of the entrance fee if he notifies of his withdrawal within a week. The results will be based solely upon speed, but the tires or wheels must be in fair condition at the end of the race. There will also be a classification for regularity according to the aggregate times of the four cars running with each make of tire.

REGULATION OF MOTOR TRAFFIC.

The question of regulating motor car traffic is very much to the fore on this side. In England a royal commission of inquiry is sitting to lay the foundation of a new motor act to replace the one which is reaching the term for which it was passed, and in France the government has been obliged to take hasty measures to give satisfaction to that section of the public which is clamoring for protection. These measures aim at eliminating reckless drivers as much as possible by laying down all sorts of restrictions in the granting of driving certificates, notably in fixing a limit of age at which people can drive cars of stated horsepowers. For instance, between sixteen and eighteen years of age the applicant for a certificate can only ride a motorcycle of 2 horsepower; between eighteen and twenty-one he can drive cars up to 35 horsepower, and beyond the latter age he is qualified to drive any car subject to his getting a certificate. To obtain this he must present duly authenticated certificates showing that he is of good moral character and that his health and eyesight are good, and the driving examinations will be much more severe than they have been heretofore. It has been decided also to suppress the use of the horn in towns, which must be replaced by a bell, but the horn may be employed on the country roads.

If no serious protest has been raised against these new regulations—which, by the way, will not be enforced until they have passed through the Chamber—it is because it is understood that they are to be of a merely temporary character. The regulations that are to permanently guide motor traffic are being drawn up by the Extra Parliamentary Commission, which has now been sitting for close on three years. The task set this commission is of so complicated a character that it finds it hopeless to hit upon any cut and dried regulations which can be passed into a permanent law, and it is therefore proposed to create a motor code and then transform the Extra-Parliamentary Commission into a permanent consulting commission which will take automobiling entirely under its wing. The new commission will consider questions and problems relating to the different phases of automobiling as they arise, and will send on recommendations to the Ministers, who will legalize them by decrees so that they will be incorporated into the motor code. Motor traffic is growing so rapidly that the changing conditions of automobiling must require constant modification in the law, and the only way of meeting the questions that will continually arise will be by the formation of a permanent commission similar to that in operation in this country.

Italians Extend Forgiveness to Hemery.

Evidently the officials of the Automobile Cluub of Italy are of a forgiving nature or do not mind being told to go to hell two or three times over, for that body has reinstated August Hemery, the sour-visaged son of France, who won the Vanderbilt cup race. Hemery was suspended for one year for using th se torrid remarks to the officials in the Florio cup race, and the French organization recognized the action of the Italian club. Although he again consigned the Italians to the hot place when news of his punishment reached him when in New York, Hemery sent a written apology to the Italian club upon his return to France, according to Robert Coquelle, a Parisian race promoter now in this country, and was restored to its good graces, not however without paying a heavy fine.

Ohio Farmers as Frothing Motorphobes.

Farmers living between Urbana and Mechanicsburg, Ohio, are waging an unrelentless warfare upon the automobile. They have circulated a petition to the county commissioners asking that the roads be closed to motor vehicles, which has been signed by every farmer on the route. For some time past an automobile stage has been plying between the two cities and the motorphobic tendencies of the ruralites have taken the most virulent form, several attempts having been made to actually wreck it by placing logs across the road.

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PENNSYLVANIA'S NEW LAW

Assesses Residents and Non-Residents and Requires Big Numbers—Licenses are Revokable.

All motorists who reside in Pennsylvania or who contemplate using the highways of that State must now make ready to comply with the new law which goes into effect on January 1 next. In some respects the law is slightly less burdensome to the residents. It vests authority in the State Highway Commission and exacts a charge of $3 per year for use of what are erroneously supposed to be the public roads. The old law required that $2 per year be paid to the county prothonotary for kindly consenting to issue a certificate of registration and $3 additional to the city or county treasurer for handing out a license.

By forbidding the display of other than Pennsylvania numbers the new law is made to more specifically apply to non-residents. Two of these numbers, which are five instead of three inches in height, will be supplied by the Highway Department, and must be displayed one on the front, the other on the rear of the vehicle. The display of these numbers, however, is not sufficient, as the operator of the car, who must be more than 18 years of age, must carry his license with him at all times, and whenever any cornfed constable feels like looking at it he must "produce," just as the Czar's subjects must "produce."

The speed limits are practically unchanged —20 miles per hour in the country, ten miles —instead of eight—in the corporate limits of cities and boroughs.

The penalties are made heavier and more specific. The old law gives courts the option of inflicting fines "not exceeding $100" or jail sentences "not exceeding 30 days." The new law makes the penalty for a first offense not less than $10 nor more than $25 or "not more than 10 days," and for a second offense not less than $25 nor more than $100, jail sentences being possible only in the event of non-payment of fines. For a second conviction the mortorist's right to use his property on the common roads of the State will be revoked for a period of not less than six months.

The full text of this precious law is as follows:

Section 1. Be it enacted, etc., That no motor vehicle, whether propelled by steam, gas or electricity, shall be operated or driven upon any public street or public highway in any city, borough, county or township in this commonwealth until the operator thereof shall have procured a license from the State Highway Department of this commonwealth, as hereinafter provided.

Section 2. Every applicant for a license shall set forth, in writing, verified by oath or affirmation, the name and residence of the applicant. No license shall be issued to any person who is under eighteen years of age.

Section 3. It shall be the duty of the State Highway Department to enter every such application in a book to be kept for that purpose, and, if all the requirements of section 2 of this act have been complied with, to issue a license to the applicant, and to furnish therewith two tags, containing the license number, not less than five inches in height, and the number of the year; for such license the applicant shall pay the sum of three dollars, which sum shall be appropriated to the use of the said State Highway Department.

Section 4. Every such license issued shall contain the name of the licensee, the date of license, and the number of the license under which the said vehicle is licensed, together with the number of the book and page in which the same is entered. The license shall not be effective until the license number is posted in a conspicuous place, both in back and front of the said vehicle. Not more than one State license number shall be carried upon the front and back of the said vehicle while operated or used on any of the public streets or public highways, as aforesaid; and a license number obtained in any other place or State shall be removed from said vehicle while the vehicle is being used within this commonwealth.

Section 5. No person or persons shall be allowed to use, operate or drive any motor vehicle, as aforesaid, upon any of the public streets or public highways of the cities, boroughs, counties or townships of this commonwealth at a speed greater than a mile in six minutes, within the corporate limits of any of the cities and boroughs thereof; outside of the corporate limits of any city or borough, as aforesaid, the lawful rate of speed shall not exceed one mile in three minutes: Provided,, That in townships of the first class the commissioners thereof may, by ordinance, fix a speed rate of not less than one mile in six minutes, in such sections of said township as they may deem such rate necessary for public safety: Provided, however, In the sections where such speed limit is fixed, the commissioners shall cause signs to be placed, at distances of not over one-half mile apart, which signs shall be readable from the highways, and shall set forth the speed limit and the penalty for the violation thereof: Provided further, That this section shall not permit any person or persons to drive an automobile at a greater speed than is reasonable, regarding traffic, danger, or injury to property or person, at any time or at any place.

Section 6. Any person using or operating a motor vehicle upon the public streets or public highways, as aforesaid, shall have displayed in a conspicuous place on the front and back of said vehicle, the tags furnished by the State Highway Department, accompanying the license for that year; and one hour after sunset he shall have the number in the back of the machine sufficiently lighted, so as to be plainly distinguishable. Every such motor vehicle shall carry, during the period, from one hour after sunset to one hour before sunrise, at least one fixed lighted lamp, showing a white light, visible at least one hundred feet in the direction towards which the vehicle is proceeding, and shall also exhibit one red light, visible in the reverse direction. Every motor vehicle shall also be provided with good and sufficient brake or brakes, and shall also be provided with bell, horns or other signal device. Every operator or user thereof shall sound the gong or other alarm when approaching a street crossing or road crossing; and shall have no more right of way, or preference as to the use of such street or road, than the driver of any horse or other animal, until the animal or animals have passed or have been passed by said motor vehicle.

Section 7. Every person so licensed shall carry with him, when using or operating such motor vehicle upon the public streets or the public highways aforesaid, his license, and when so required by any constable or police officer of this commonwealth shall produce the license for inspection. No license issued shall be valid for a longer period than one year. It may be issued on the first day of January, or at any time thereafter, but shall expire on the thirty-first day of December next ensuing.

Section 8. The constables and police officers of the cities, boroughs and townships of this commonwealth may arrest, upon view and without warrant, any person or persons violating any of the provisions of this act: Provided, That in the event of an arrest for violation of any of the provisions of this act, if the defendant is unable to give sufficient bail for a hearing or for his appearance at court, the magistrate before whom he is first taken, shall, in lieu of such bail, hold in custody the motor vehicle found in possession of the defendant; and the court, after the trial of the defendant, if no sufficient bail according to law has been given in the meantime, shall make such order as to the disposition of such motor vehicle as to it shall seem just and proper.

Section 9. All civil actions for damages arising from the use and operation of any motor vehicle, as aforesaid, may be brought in the city or county in which the alleged damages were sustained, and service of process may be made by the sheriff in person, or by his deputy, in any part of this commonwealth, in like manner as process may now be served in the proper county.

Section 10. Any person violating any of the provisions of this act shall be subject to a fine or penalty of not less than ten dollars nor more than twenty-five dollars, to be collected by summary conviction before any magistrate or justice of the peace, as like fines and penalties are now by law collectable; or, in case of non-payment of the fine within forty-eight hours, to undergo an imprisonment in the county jail for a period not exceeding ten days. Any person or persons who, having been previously convicted before a magistrate or justice of the peace

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of this commonwealth of any violation of the provisions of this act, upon commission of the second or a subsequent offense shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be sentenced to pay a fine not less than twenty-five dollars nor more than one hundred dollars; or, in case of non-payment of such fine, to undergo an imprisonment in the county jail for a period not exceeding thirty days. Upon conviction of a second violation of the provisions of the act, certified to the State Highway Commissioner, the license issued to such person, so convicted, shall immediately be revoked by the State Highway Commissioner, and shall not be reissued for the space of six months after such revocation.

Section 11. All fines and penalties collected under the provisions of this act shall be paid to the city, borough or township treasurer, wherein the offense is committed, and the same shall be expended by said city, borough or township for the benefit of the public roads.

Section 12. This act shall not apply to any racecourse or private road, nor to any passenger railway or steam railroad confined to tracks, nor to steam or other street rollers, nor to any of the motor vehicles which any manufacturer or vendor of automobiles may have in stock for sale, and not for hire or for his private use.

Section 13. This act shall take effect on the first day of January, Anno Domini one thousand nine hundred and six.

Section 14. All acts or parts of acts inconsistent herewith are hereby repealed.

Will Buy Licenses En Bloc.

Although Philadelphia has long been called the "slow town," the automobile club of that city is showing a spirit of progressiveness that makes the name seem misappropriate. When the new automobile speed law goes into effect on January 1 next all members of the Philadelphia Automobile Club will not be put to the inconvenience of individually securing licenses. The club will stand sponsor for all the applications and will obtain the licenses from the Secretary of State by one application.

Vernor Would Require Aprons.

Alderman Vernor has introduced an ordinance in the Detroit (Mich.) council making it necessary for all automobiles in the city to be properly aproned. It likely will be tabled, however, for the Detroit Automobile Club has filed a protest against the passage of the measure, claiming that aprons create a dangerous condition, which sometimes results in the collected oil catching fire and burning up the car.

Albany Will Offer Touring Trophy.

At the annual meeting of the Albany (N. Y.) Automobile Club it was announced that the organization will offer a $250 cup to be offered in competition in a touring contest to be instituted next year. At this meeting the following officers were elected: President, Archibald J. McClure; vice-president, J. P. Randson; secretary-treasurer, C. D. Hakes.

FOR THE GLIDDEN TROPHY

Date Set and Route Outlined for 1906 Contest—Toronto the Destination.

The 1906 touring competition for the Glidden trophy will not, as heretofore, start and finish at New York City, but from Buffalo. The journey of some fourteen hundred miles will, however, end in New York. The route will be a circuitous one, taking in the best roads of Canada and New England, but withal the test will be a severe one as the roads to be traversed are particularly hilly. The date and details of the 1906 tour were given out late last week by the runs and tours committee of the American Automobile Association which, of course, has the affair in charge.

The start will be made from Buffalo, N. Y. —by invitation of the Automobile Club of Buffalo, of which Percy Pierce, winner of this year's contest, is a member—on the morning of July 23, and Niagara Falls will be visited en route to the Canadian border. The A. A. A. have started negotiations with the Canadian customs authorities so that no delay will be experienced at the border. From Niagara Falls the route will be over a fine old gravel road through St. Catherines, Grimsby and Hamilton to Toronto, where the first night stop will be. The tourists will be the guests of the Toronto Automobile Club.

For the second day the run will be over the famous Kingston road, the best macadamized highway in Canada, passing through Whitby, Oshawa, Bowmanville, Port Hope, Cobourg, Belleville and other old Canadian towns to Kingston. Here it is only a short distance to the Thousand Islands in the St. Lawrence River, and it is probable a day may be spent in the neighborhood.

Dirt roads of inferior quality will be ridden over on the third day, via Brockville and Prescott, and thence north to Ottawa, the Canadian capital. Here will be a night stop before beginning the short but tedious journey over dirt and rock roads to Montreal, the largest city in the Dominion. Better roads and a more interesting run will be had on the fifth day along the south shore of the St. Lawrence to Quebec, one of the oldest and most picturesque cities on this continent.

From this point the itinerary is not so well fixed in mind, but will include a run south over the uncertain Maine roads to Poland Springs, thence west through New Hampshire and the White Mountains to Bretton Woods for a day's rest, then traversing Vermont to Lake Champlain; thence to Saratoga and Albany and along the Hudson River to New York.

Calls "Lightning Conductor" a Libel.

An example of what may very aptly be termed "literary prostitution" has just been brought to light through the beginning of an action for libel against the English publishers of the two automobile novels written by the Williamsons and entitled "The Lightning Conductor" and "My Friend the Chauffeur," by the makers of the Benz cars.

In both of these books what is known as the "German Horror" is represented by an old 3 horsepower Benz of the vintage of 1898, which the American heroine is inveigled into buying at a high price from a scheming English nobleman. The hero is the owner of a new Napier, and gallantly rescues the heroine from the innumerable breakdowns of her lumbering vehicle. It all turns out to be a clever dodge to advertise the Napier car, which during the remainder of the books—the old German Horror is killed off early by burning itself up or in similar fashion—performs magnificently, and as every good and true automobile, whether bearing a hero and heroine or otherwise, should. The novels have had a large sale, and the Benz Parsifal Co. is accordingly seeking financial balm.

Allen Duly Authorized to Automobile.

After wandering through a labyrinth of laws and red tape the Comptroller of the Treasury last week rendered a decision that William C. Allen, electrical engineer of the District of Columbia, can have an automobile instead of a horse and thus save the District $300 a year. Allen discovered that he could travel much cheaper by motor car than by horse and communicated the fact to the Comptroller. No laws were found to bear on the subject, but the Comptroller, with more judgment than others of Washington's officialdom have shown, concluded that the use of the automobile was not contrary to law.

Speedway Yarn from Winnipeg.

Some energetic publicity promoter of the northern country has circulated the report that at the next sitting of the Manitoba Legislature application is to be made for authority to construct, operate and maintain a toll road or track of oval shape for the exclusive use of automobiles, with one end touching Winnipeg and the other Portage la Praire, the total distance to be covered by the course being 158 miles, according to the preliminary surveys. The course will be constructed of asphalt and oil, with a sand surface. Naturally "an effort will be made to have the big automobile races run on this course."

Vagaries of Batavian Law.

A motorist in Batavia has had to appear before the authorities at Munich on the ground that he had used a trumpet to give warning of his approach, instead of the more usual horn, blown by a rubber "pear." He argued that, though the law stated that a horn was necessary, it did not define how the born was to be blown. After a long discussion he was acquitted.

Burgoynes to Tour Egypt.

C. G. Burgoyne, ex-president of the Florida East Coast Automobile Association, has purchased a 1906 Thomas car, in which he and his wife will tour Egypt this winter. Mr. Burgoyne effected the purchase of the Thomas car very quickly after seeing the new model.

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AN EVENING OF ALCOHOL

A. C. A. Hears All About it and a Full House Absorbs it, Mentally, of Course.

"Alcohol as a Motor Fuel" was the subject of the first monthly lecture of the season held at the rooms of the Automobile Club of America on Tuesday night last. This topic was interestingly treated by Whidden Graham. It must be explained, however, that Mr. Graham is not a mechanical expert, but rather a statistician who has made an extended study of the economical aspect of the question, and not the technical, and his treatment of the subject was from this point of view. As the Motor World stated some months since, there has been a tremendous propaganda afoot in this country for the last three years, having been carried on with a view to the passage of a bill by Congress exempting denatured alcohol for industrial purposes from taxation.

The United States is the only civilized country in the world that does not make a distinction between alcohol as a beverage and the same substance for commercial uses. It is something that reflects lasting discredit on the much vaunted progressiveness of the Americans as a people that this is so, for fifth rate nations which are compelled to resort to revenue raising measures that would not be tolerated in this country find it exceedingly profitable to exempt industrial alcohol from taxation. This has resulted in rendering the manufacture of a great many articles economically impossible in this country despite the almost prohibitive tariff barrier that the foreign maker must surmount. Mr. Graham has been in charge of the propaganda, backed by some of the most powerful industrial interests in the country, such as the General Electric Co., the International Harvester Co. and others, and it was the purpose of his lecture to demonstrate the bearing that the success of their efforts in procuring legislation to this end would have upon the automobile industry.

"There are always those who are ready to raise a cry that certain products are becoming scarcer," he said, "but their reason for so doing in the majority of instances is merely a blind behind which to advance prices. Many have accordingly classed the cry of the increasing scarcity of gasolene in this category, but quite the reverse is true. Fifteen or twenty years ago gasolene was so cheap that it was not considered worth marketing, and was accordingly used under the boilers in the refineries throughout Pennsylvania and Ohio. Then it began to be used industrially in a small way, and was to be had at six to eight cents a gallon; probably its price at retail did not exceed 10 cents for a number of years. Since then it has become double, and it takes no great amount of foresight to see that with each succeeding year it must soar unless something be done to relieve the demand, which has now become pressing.

"Contrary to the generally prevailing impression, the automobile is not responsible for more than a fraction of the latter. The gasolene stove and the small stationary engines used by the farmer are the largest consumers in the land. According to the fire underwriters' returns for last year, there are no less than 800,000 gasolene stoves of all kinds in use, and something like 200 000 stationary engines, practically all of which take their quota. Besides this an enormous quantity is used for lighting in rural districts, small plants for household requirements being largely marketed, the liquid being vaporized and burned as gas. But more than all these put together, the export demand at better prices is so large as to absorb more than half of last year's total supply, no less than 24,000,000 gallons of a total output of 40,000,000 gallons going abroad.

"Why should gasolene become scarcer? is, of course, a very natural question, and one that is readily answered. The grades of petroleum that are the very richest in light hydrocarbons do not produce on the average more than 5 per cent of gasolene. These are the oils found in the Pennsylvania and Ohio fields, thought to be the best in the world. But the production of these wells has been steadily on the decline for a number of years, and according to expert geologists there is little or no prospect of the discovery of others, either in the same territory or elsewhere in this country. Production in the East has now dropped to a point where Texas and California supply the greatest fraction of the annual output, but unfortunately the oil is of a character totally lacking in the lighter hydrocarbons such as gasolene, or containing them in such extremely small quantities as to be a negligible factor. Borneo and Sumatra produce high grade petroleum rich in gasolene, but the supply is very small; as for the great Russian oil fields, their output does not begin to supply the demands of Europe, as witness the tremendous quantities sent to the Continent and England by American refiners. The world's supply is accordingly limited, and there is little or no prospect that any discovery of the future will alter matters in this respect. As for making gasolene synthetically, I am not a chemist, although I have no doubt it could be done. Like artificial diamonds, however, the quantity would not be a drop in the bucket and it would come rather high. Then why will the advent of a perfected kerosene motor not solve the problem? For the same reason. It is getting scarcer every year, and any great increase in the demand would instantly jump the price.

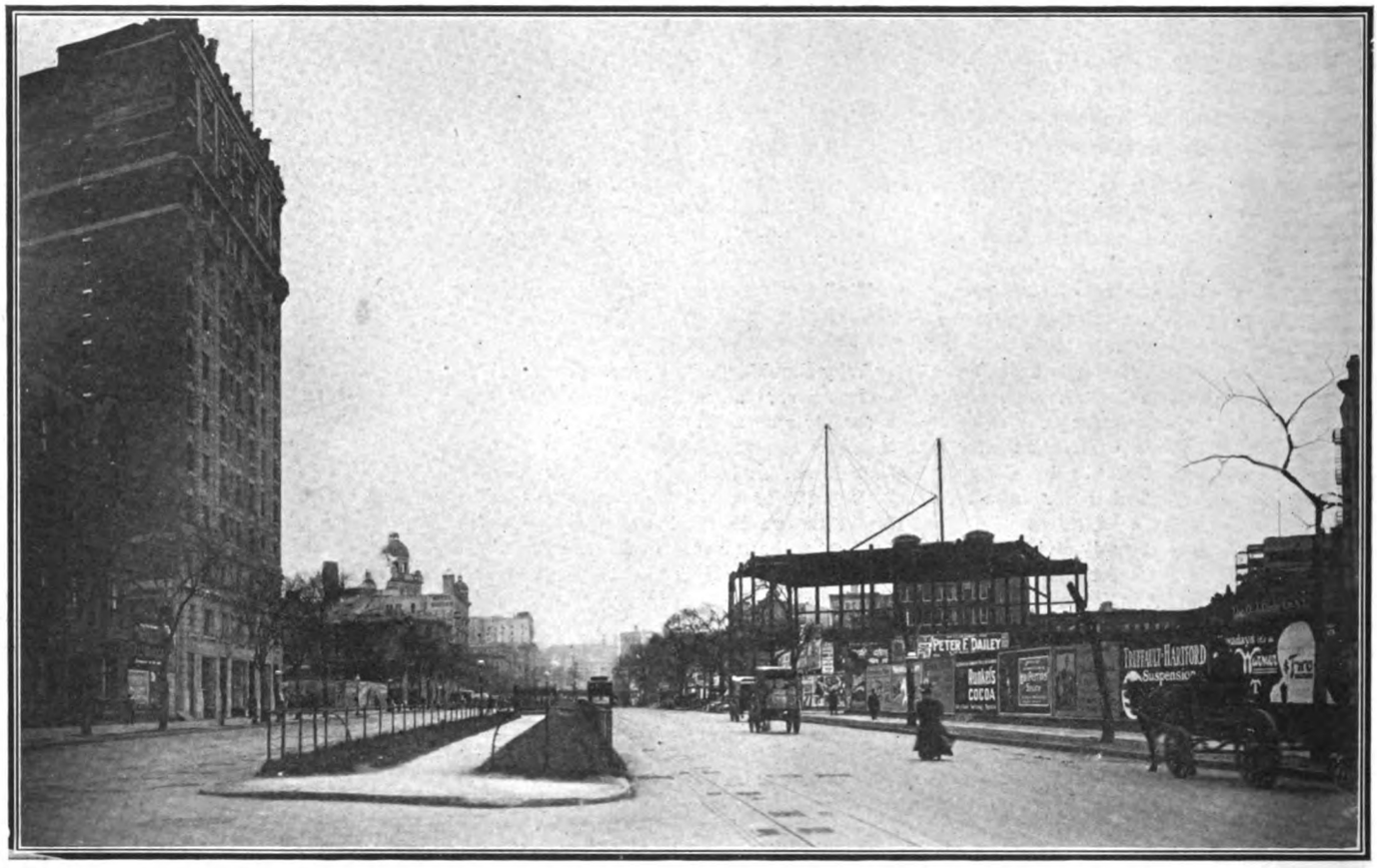
"Now, alcohol has been demonstrated to be a fuel par excellence for the internal combustion motor. The only problems its use in this capacity presents to place it on a par with, if not above, gasolene are slowness in starting, half a minute or more being necessary to vaporize it, and the designing of engines of higher compression as well as carburetters especially intended for its use. None of them insurmountable difficulties. The efficiency of alcohol as a fuel is 38 per cent, as compared to not more than 20 per cent for gasolene. How can this be when gasolene is credited with a very much higher number of British thermal units per pound is a very natural question that is answered by the authorities responsible for the above efficiency figures with the statement that, owing to the very much greater compression permissible with alcohol, without danger of spontaneous ignition—almost double that allowable with gasolene, as well as the much slower and more uniform expansion that extends throughout the entire stroke—a far more complete utilization of every atom of fuel is possible. More than that, as 90 per cent alcohol—that is, alcohol containing 10 per cent water—is found to be best adapted for motor use, this amount of water acts as an effective cooling agent, so that a motor run with alcohol requires far less provision for cooling and a much smaller fraction of the heat or energy developed is wasted. As you are doubtless all familiar with the extended experiments that have been so successfully carried out in Germany and France there is little need to dwell longer upon this phase of the subject except to refer to the many other advantages of alcohol. First and foremost comes its safety; whether a pint or a thousand gallons be spilled it will not generate an explosive mixture with the air in a room or similar place; if ignited it will only burn freely and may be put out very readily with water, whereas nothing short of sand will extinguish gasolene. It does not produce an offensive odor, and, moreover, does not carbonize; it is completely consumed, leaving no residue. It possesses other advantages which it would take too much time to detail.

"To come back to the economic aspect of alcohol, there is no country on the face of the earth so favorably situated to produce it as the United States. Anything containing starch is capable of being converted into alcohol by very simple and cheap processes; its very simplicity accounts in one way for the prevalence of moonshine whiskey, and it will doubtless surprise you to know that there is more moonshine whiskey made within ten miles of the New York City Hall than all the rest of the country put together. A bushel of corn that sells in the market at 35 to 40 cents will yield two and a half gallons of 90 per cent alcohol, thus making its cost very low. As a matter of fact, alcohol at 31 cents a gallon has been found to be cheaper for illuminating purposes in France than kerosene at 15 cents. Potatoes are likewise a most prolific source of alcohol, Germany's production last year amounting to 75,000,000 gallons, of which the greater part was consumed for motive power. Now, last year Maine had such a bumper crop of potatoes that they were scarcely worth 30 cents a barrel, and hundreds of tons of them were thrown away. This could never be with tax-free industrial alcohol, as the latter may be stored and kept indefinitely without deterioration, thus imposing an economic check and effecting a balance between lean and fat years agriculturally.

"There is one charge in connection with the use of alcohol for motor purposes that causes me to revert to that subject for a moment, and that is that it rusts the motor badly and consequently is not fitted for such use. This has never been found to be the case except

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Where New York's "Row" is Extending Itself.



BROADWAY, NORTH OF COLUMBUS CIRCLE.

where wood alcohol has been used as denaturent. Wood alcohol contains formic acid and tends to generate formaldehyde, both of these being corrosive agents.

"The substances used for denaturing the alcohol—that is, rendering it unfit to drink—are naphthalin, pyridin, which is very offensive; benozol and sulphuric ether."

John Jacob Astor was an interested listener, though his attention appeared to be confined principally to thinking up questions in regard to what substances other than alcohol could be employed as a motive power for the automobile, although one of his interrogations was as to whether alcohol could be produced from coal. Illuminating gas, acetylene and hydrogen gas were also objects of his search for information in the same direction in spite of the fact that Mr. Graham had acknowledged himself as incompetent to speak technically prefatory to his remarks.

The Extension of "Automobile Row,"

New York's "Automobile row" is gradually stretching itself out along both sides of Broadway above and below Columbus Circle, the preemption of the territory north of that dividing point being a recent development, although there have been establishments, such as that of the White salesroom and garage, scattered in various parts of that territory for some time past. Automobiledom, as a whole, has taken a substantial step northward, and out of side streets to a great extent to line Broadway from 44th street up in the past year, probably the only reason for its not having passed the Circle hitherto being the utter lack of accommodation. Not alone have suitable buildings been wanting; there were none at all.

How great the desire of agents to get into that particular part of the city has been, is well illustrated by the rental of the entire Broadway front long before it was ready for occupancy, of a large apartment hotel that has recently been completed on the southwest corner of 61st street and Broadway. From north to south these stores now form the home of the Grout, Stoddard-Dayton and the Elmore, the last named being handled by A. E. Ranney & Co., who will devote themselves entirely to the two models turned out by the Clyde, Ohio, factory during the coming year. These will be the two-cylinder, two-cycle model already familiar, and four-cylinder, two cycle motor placed vertically under the connet as is customary. Details of this latter car have not as yet been forthcoming, and as it is not alone to be in every respect a modern piece of automobile construction, but is claimed by the makers to be the equal of a car equipped with a six-cylinder, four cycle motor, its advent is looked forward to with interest by many.

This particular spot seems destined to become a nucleus in the near future for diagonally opposite but one block away, on the southeast corner of 62d street, is being erected the new building intended to house the Thomas interests in this city, while right across the way, on the northwest corner of Broadway and the same cross street, there is a building nearing completion which rumor has it, will shelter the Panhard cars when completed. Near the other end of the same block upon which the three agencies already mentioned have located, will be found a newcomer in New York—the St. Louis. This car, which is about to make its debut in Gotham, will be handled by the St. Louis Motor Car Co., of New York, of which Messrs. Hecht & Friedberger will be the proprietors. They have located at 1843 Broadway, and will devote their energies to the two St. Louis models, the 22 horsepower horizontal opposed and 60 horsepower four cylinder vertical.

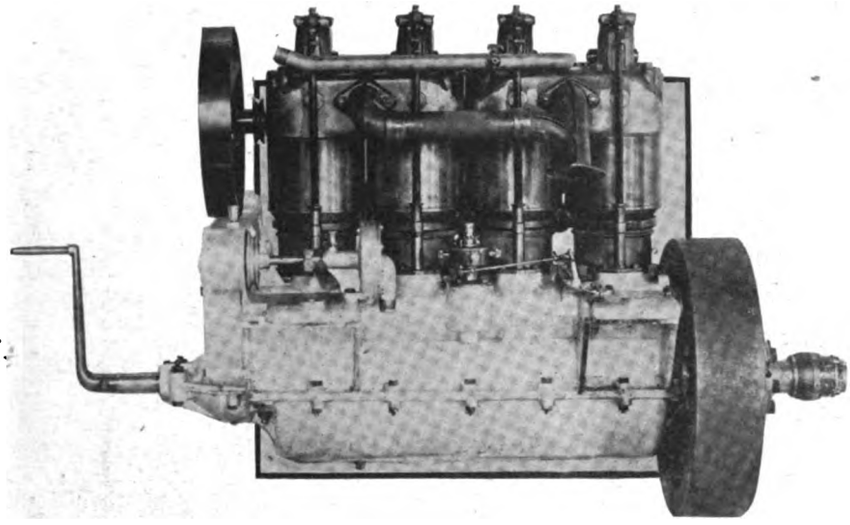
Salt Lake City, Utah—Math Day, of Fillmore, Utah, proposes to establish a line from Kanosh to connect with the Salt Lake route. The intention is to supplant the present stage line and reduce the time between the two points.

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ABOUT THE POPE-TOLEDO

Characteristics of the 1906 Model and Wherein it will Differ from Previous Ones.

Fuller particulars of the Pope-Toledo Type XII, which was outlined in last week's Motor World, show that the car is a Pope-Toledo from the ground up, yet a new car in every point, and thoroughly modern to the last fibre. In the construction of this machine, the designer's aim has been, first of all, to produce a car in which the engine



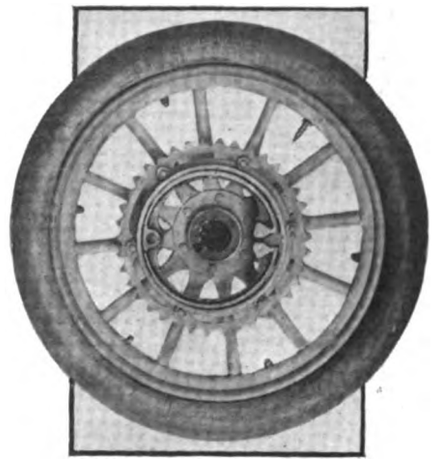
1906 POPE-TOLEDO ENGINE.

should not be unduly hampered by its full rated load. That is to say, the intention was that of increasing the ratio of motor power to weight to a point which was beyond parallel. Of the two ways of accomplishing this, the more difficult, and that involving the greater nicety of detail, was chosen, and, instead of increasing the power of the motor to an unnecessary degree, the weight of the car itself was reduced by the adoption of new materials of construction and refinement of detail, thereby securing the disideratum without endangering the staying qualities of any of the parts.

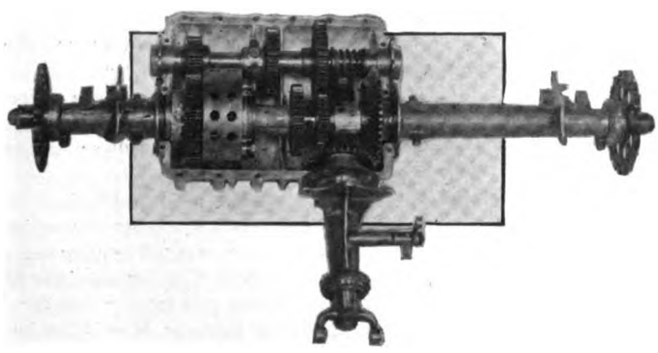
In working toward the desired end, however, the comfort and convenience of the passengers was sought after quite as much as the main object, and, as a result, the machine is equipped with a body capable of carrying five persons in absolute comfort, with extra room for the "two more" who are sure to be in evidence; the latter being taken care of in a lift seat which, when not in use, folds away out of sight under the driver's seat in front. In the finish and equipment of the body as much care has been taken as in the working out of the more essential details, even to the extent of the provision of protection strips between the mud guards and body, which secure an absolute closure of the entire under side of the car from the road.

The frame has been designed with an eye to the elimination of parts as far as possible, the fewest number of elements consistant with structural excellence having been untilized. I-beam axle construction is used, the material employed having a tensile strength of 110,000 pounds per square inch. The braking equipment consists of two sets of internally expanding brakes, acting upon drums attached to the rear wheels, each set being interconnected with the clutch mechanism in such a manner that the application of either serves to release the engine. A noteworthy point in connection with a study of the car is that the wheels are assembled entirely at the Pope-Toledo factory, and are given the same care and supervision in the making as are all other portions of the machine.

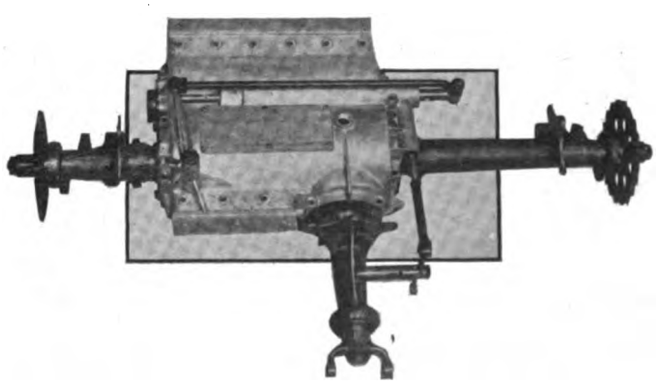
In the illustration of the motor here presented, the new method of constructing the cylinder heads in pairs is well shown. By this means, the advantages of unit cylinder construction are maintained, while at the same time the regidity of the structure, which is to be had with the multiple cylinder casting, is secured by the bridging effect of the heads. The ports are siameesed, thus simplifying the piping and doing away with unnecessary outrigging. As will be seen from the cut, the exhaust valves are in an inverted position, and are actuated by long tappet rods, in conjunction with short walking beams mounted upon the heads themselves. The carburetter, which is an improvement over the type used last year, and is fed by gravity from an auxiliary tank mounted on the dash and fed by a hand pump from the main supply tank, has an average consumption of one gallon for a distance of 17 to 18 miles.



POPE-TOLEDO BRAKE.



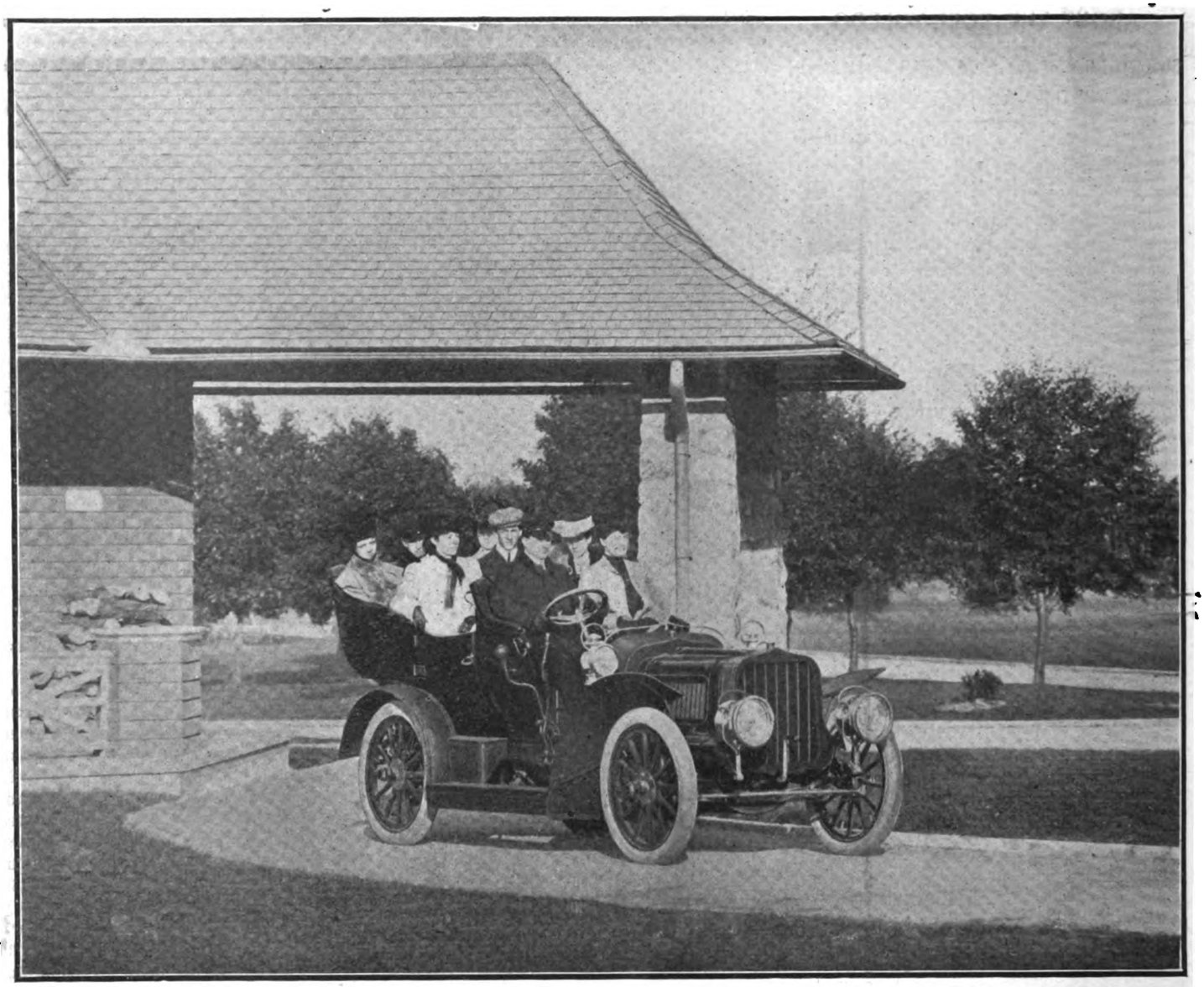
ARRANGEMENT OF POPE-TOLEDO GEARS



GEAR CASE SHOWING INTERLOCKING PIN.

A point in the mounting of the machine which should not be overlooked in this connection, is that the mechanical oiler, instead of being placed on the dash, as in many types of machine, is placed on an arm of the engine base, in close proximity to the exhaust line, thereby ensuring an even tem-

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PASSENGER CAPACITY OF THE 1906 POPE-TOLEDO WHEN FITTED WITH "JUMP" SEAT.

perature to the lubricant under all conconditions of climate. The feed of oil is positively regulated by a system which is without a check-valve, and is entirely automatic. Separate sightfeed glasses are placed upon the dash as a means of indicating to the driver the rate of the various feeds.

In the transmission, the unique arrangement adopted last year has been retained, the lay shaft being placed parallel to the countershaft, and alongside of it, thus throwing the gear case abaft the mid section of the car. As will be seen from the accompanying cuts, the arrangement is extremely simple and compact; this fact, and the method of strengthening the casing by the use of cast webs serving to insure long life to the gears and freedom from distortion to the shafts. The drive from the clutch is to a bevel gear, mounted upon a sleeve which rides freely upon the differential shaft.

Upon this sleeve, and forced to turn in unison with it, is the sliding member with which the changes are effected, while a gear fixed with the differential mechanism meshes with the driving gear on the lay shaft. The lay shaft also carries two other gears with which the sliding member meshes, one of them being slidable, and though normally held in one position by a spring capable of being moved into engagement with an idler in securing the reverse. The high gear is obtained by uniting the sleeve upon which is fixed the driving bevel gear with the shaft upon which it rides, thus securing a direct drive to the sprockets.

The gear case is mounted upon transverse members of the frame, and the suspension is rendered more rigid by the fixing of the counter shaft brackets upon the side members of the frame. The sliding member of the transmission is controlled by means of a transversely working rod, which is drilled out at intervals to permit of the engagement of a pin, actuated by a clutch mechanism to lock the gears in full mesh whenever it is engaged. The action of this mechanism is shown in the illustration of the outside of the case. The more vital parts of the transmission mechanism are constructed of a special steel which yields a tensile strength of 225,000 pounds per square inch upon test.

That the weight ratio is all that could be desired is shown by the figures which give 1 horsepower for every fifty-four pounds of car. That the action of the fabric is all that it should be is shown by the fact that upon recent trial the test car, which has been put over 8,000 miles of road, first and last, carrying a dead load of 800 pounds in addition to two persons,, made a run of 782.7 miles on a consumption of 49¾ gallons of fuel, while the latter portion of the trip, which was over exceptionally good roads, was made on 9.8 gallons for 210 miles, the average being 15.8 miles to the gallon for the entire trip and 21.5 miles to the gallon for the last stretch—a showing that is the best evidence of the well-calculated relation between weight and power.

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WHAT LONDON'S SHOW DISCLOSED

No Startling Innovations but Certain Well Defined Tendencies are Made Plain.

Friday, November 17, marked the opening of what is conceded to be England's most successful show season, judging from the number of exhibits and the quality of the wares staged. As in former years, two separate exhibitions are held—one, at Olympia, in West Kensington, being devoted chiefly to the display of motor cars and chassis, while the Stanley Show, at Agricultural Hall, is given over chiefly to the cycle exhibits, and the cars and masses of sundries for which there is no room at Olympia. This opening of the British season in advance of the Paris Salon, is an innovation, doubtfully regarded at first by many, on account of the fear that many of the foreign exhibitors would not care to reveal their new models until the Paris event, but the sequel proves these fears to have been groundless, and stamps the affair as being beyond expectation.

At the Olympia exhibition, where the Society of Motor Manufacturers and Traders has placed some three hundred exhibits, there is far more of novelty to be seen than was to have been expected, considering the general tendency toward a standardization of types. Although that tendency is growing largely from year to year, there is a considerable showing of originality both in detail and general design; so that, as a local journal puts it, "there is not the slightest indication consequently of any approach to rigid uniformity or stagnation of inventive faculty." Of the general tendencies, the most noticeable are a more general adoption of ball bearings, a strengthening of the position of the Cardan drive, an increase in the size of tires to cope with the now generally adopted types of closed body, and a corresponding increase in engine powers. A greater number of six-cylinder motors are to be seen than ever before, and two makers show eight cylinder machines, one type being of the vertical order, the cylinders being arranged in tandem position, and the other being of the V type, with four cylinders in each group.

Of the three hundred exhibitors occupying the space in the hall and its annex, fifty-one represent foreign manufacturers. Over a hundred are showing pleasure cars, thirty-five commercial vehicles; twenty-six motor boats, and the remainder, display bodies, parts and accessories. Some four hundred and fifty cars and chassis are to be seen, of which all but a scant dozen are propelled by gasolene power, the remainder being perhaps equally divided between the steam and electric types. Some 65 per cent of the gasolene cars are equipped with four cylinder motors, 20 per cent with two cylinder motors, 8 per cent with single cylinder motors, and 4 per cent with three cylinder motors. The balance have either six or eight cylinder engines, there being something like a dozen of the former type on view, and four of the latter.

As formerly, the vertical position of the motor is the greatest favorite, although a few cars are shown having horizontal engines, and one make in which the V type is employed. As was predicted in The Motor World recently, a number of cars are shown in which the engine, though placed well toward the front of the chassis, is covered by the driver's seat, and the bonnet is done away with. The machines of the latter type are, for the most part, intended for landaulette or cab bodies, and in some cases for commercial work.

As for the ignition problem, the jump spark is still largely in the majority, something like 85 per cent of the cars shown being equipped with one of the jump spark systems, either singly or in combination. About 52 per cent of the cars have the primary battery as a source of current, 11 per cent the high tension magneto and a good 10 per cent the low tension type of magneto. Twenty-three per cent of the cars have both high tension magneto and batteries, and something like 2 per cent have the low tension magneto, with batteries and spark plugs fitted as a standby.

In the matter of clutches, there is a good deal more variety than was to be seen a year ago, the common type of leather-faced cone clutch being forced to give way to the disc type in both the single and multiple forms, and, too, there is a good representation of the hydraulic type, a distinct innovation with this season. On the whole, there would seem to be a trend away from the orthodox type, and a leaning toward the multiple disc pattern, though before a large adoption of this, the development of the hydraulic principle may prove it to be the more desirable of the two.

The sliding gear type of transmission is holding its own. As a rule, four speeds are provided, though a large number of makers furnish but three. "Direct drive on the high" is the order of the day. In the matter of the drive from the transmission to the rear wheels, the method of the Cardan shaft has a majority of 57 per cent, something like 40 per cent of the cars shown having the chain drive of the single or double type, while there is a sprinkling of other types, including the new worm drive, which has been described in these columns. A few makers give an option between the chain and shaft systems. In wheel base and weights there is an increase in the large types of machine, the more prevalent length for cars of fifteen horse power or more being one hundred inches and upward to one hundred and twenty inches, while the weights within this range run at somewhere in the neighborhood of eighteen hundred pounds for the chassis alone, two thousand pounds being a not uncommon weight for the chassis in the case of a twenty horse power car.

Body design, as far as types alone are concerned, shows but little variation over last year. The side entrance principle is by far the most popular, and the closed pattern of body shows a rapid increase in favor. There are numerous improvements in the way of a softening of the lines and an increase in the comfort of the quarters given to the passengers. There are a number of different types of convertible body shown, the landaulette type being greatly in evidence. One firm showing cars equipped with this type of body, gives a variation in an arrangement whereby the removal of a portion of the body structure and the addition of a second top, converts it into a victoria, the change being easily accomplished without loss of time. Arrangements for the comfort and convenience of the traveller are more in evidence than ever, both in the way of more roomy accommodations, and in the provision of more elaborate fittings.

Nearly 13,000 Miles Without Tire Trouble.

In these days one hears quite enough of the poor performance of tires on the road, and of the performance of poor tires on the road, and but little, strange though it may seem, of the really satisfactory service which may be got from a set of tires under favorable circumstances, complaint coming more freely from the lips of the discontented one than praise from those of him who has had "better luck." V. L. Emerson, general manager of the American Auto Car Company, of Cincinnati, O., is of the latter class, though not as silent about it as the average, for he says that he has a set of tires on a 690-pound car of twenty horse-power which have run 12,600 miles in the aggregate without the expenditure of a penny for repairs. They are three and one-half inches in size and of American make, and although they have been used until the rubber facing is entirely worn from the surface of the tread, they have in no other way depreciated and have not cost a penny for repairs.

New Dust Layer fr m Greece.

United States Consul Horton is responsible for the statement made in a recent report to the Bureau of Commerce and Labor that a newly discovered substance which boasts of classic Greece as its place of origin, and is known by the name of "akonia," is quite as effective as oil as a dust preventive on roads, and has the added advantage of being much cheaper as well as not possessing the objectionable characteristics of the latter.

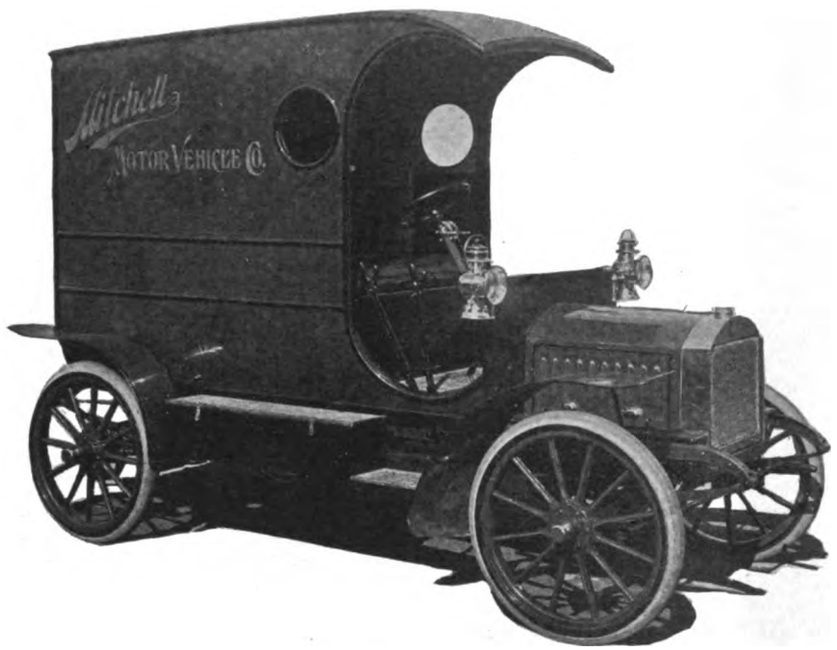
Writing from Piræus, Greece, he says that the Mayor of that extremely ancient city is authority for the statement that one ton of akonia dissolved in 500 gallons of water will sprinkle a 30-foot roadway for half a mile so effectively that no dust whatever would arise from it, either through the wind or travel. As employed there, a second coat is administered fifteen days after the first, the composition of this dose being one fourth of a ton of akonia dissolved in 400 gallons of water. The solution is said to form an impervious coating over the surface of the roadway.

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FOR COMMERCIAL CARS ONLY

Novel Venture in New York—How the Manager "Sizes Up" the Situation.

One of the most surprising year-end developments to make its appearance is the establishment of the Mitchell Motor Vehicle Co., in New York City, under the management of Charles P. Skinner. On the face of it this announcement does not appear to have any particular importance except to those directly interested, but upon closer examination it will be found to represent a development the appearance of which has not generally been regarded as due for some time to come—that is, the establishment of a firm to handle gasolene commercial vehicles exclusively.



This concern will devote its entire time and attention to handling in New York and adjacent territory the commercial vehicles built by the Mitchell Motor Car Co., of Racine, Wis. A recently added specialty to the line of this company is a light delivery wagon with a capacity of one ton, and this will be supplemented by one of larger capacity at the opening of the year.

The palm of being the pioneer entrants into a field which has thus far only been considered as a side issue, must certainly be accorded the new firm. Sharing the general opinion that this move appears somewhat premature, and that the prospect of building up sufficient business in auto trucks alone, is not alluring, a Motor World man called on Mr. Skinner to obtain his views on the subject. His enthusiasm is apparently not of the boil-over and evaporate-quickly class, but is of the stay-at-it order, and his only surprise was that any one should question the ability of a firm to keep in the swim by devoting itself exclusively to the commercial vehicle in view of the great expansion for which the latter is due during the coming twelvemonth.

"It is, of course, a totally different proposition from the pleasure car, and has to be gone about in a different manner, but there are features of it which make it a more encouraging thing for the future than the purely pleasure car end of the business," he said when appealed to. "Large firms who are desirous of having as efficient a delivery service as it is possible to obtain, will not stop short of one car, or ten, for that matter; so that where we sell one we more than reasonably certain of receiving duplicate orders for some time to come.

"Of course, we realize that we are in for a considerable siege of missionary work, but from what we have done so far, I think we will find plenty of profitable business to occupy our attention right here in the city. The outlook is far from discouraging, although in the opinion of many in the trade 'we are up against it.' We do not consider matters in that light and see no reason why there should not be enough commercial vehicle business in this city to support a concern giving its attention exclusively to that end."

At present the quarters of the Mitchell Motor Vehicle Co. are in the Arcade, at 49th street and Broadway, but shortly after the end of the year they expect to occupy quarters of their own somewhere in that vicinity. So far their only stock in trade consists of a light delivery wagon of one ton capacity, the chassis of the Mitchell light touring car being employed as the foundation. This is equipped with a two cylinder vertical motor of 14 horsepower under the bonnet, the transmission being through a friction clutch, sliding gear change speed and propeller shaft to the live axle. This is equipped with a delivery body to suit the requirements of the purchaser. The selling price complete, differs with the nature of the latter's wants, but averages about $1,500. After the first of the year the line will be increased by the addition of a gasolene truck.

Sweden a Small Car Country.

According to a consular report the business in motor cars in Sweden is almost entirely in the hands of the Germans. Five or six Swedish firms have started to manufacture low priced cars, and a certain number of runabouts are imported from America. As they have had no experience with high grade cars, users in Sweden have come to regard $600 as about the limit that should be paid for a vehicle, but as the wealthy classes are beginning to purchase vehicles, it is thought that a good business could be done by a firm who would send a few high grade cars in charge of a representative capable of showing off the points of the vehicles and giving lessons to intending purchasers. It is absolutely necessary that a depot should be established in each town with spare parts, repair shop and garage. At present there are no garages in Sweden, and the towns where most of the trade can be done are Stockholm, Malmo, Gottenburg, while Norrkoepping is a rich industrial centre with good roads that offer an excellent chance to the enterprising maker.

In Stockholm there were recently 151 motor cars, excluding the ten owned by members of the royal family. This number is said to be increasing every day. As nearly all towns and villages in Sweden have electrical generating plants, there might be an opening for electric vehicles.

French "Essence" is Overrated.

That the claim so frequently put forth by unthinking motorists as to the superiority of French "essence" over plain gasolene is all "leather and prunella" is the experience of one who has given it a trial. It is more expensive in France than here or in England, but according to the story, once a carburetter got a whiff of one of the fancy brands of "essence" with a Pullman car name, the engine would give a snort and race away at double speed. More than once has this skeptic taken his car in and out of France, but has failed to note any superiority of push, and sums up by concluding that the claim is prompted by that moral deformity from which certain individuals in all countries suffer—an irresistible craving to exalt all other countries and their products above their own.

One of the novelties which British ingenuity has prepared as a "surprise" to the public is a protecting apron which, rising from the dashboard, bends back over the lap of the driver and his companion on the front seat, covering the steering wheel and levers and completely enveloping the occupants of the fore part of the car. When not in use this device can be rolled up and stowed away in the car, or left behind.

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CONVERSION OF A MOTORPHOBE

The Little Incident that Won Him and that also Aptly Illustrates Human Nature.

"Did I ever tell you how I converted a farmer up in Sussex County to the use of the automobile?" casually inquired the Occasional Attendant as a number of us sipped our demi-tasses and puffed our Havanas at Carburetto's the other night. "No? Well, it just goes to show that nearly every man —there are but few exceptions—possesses the innate desire to get ahead of his fellow man, and to attain the object of his desires will frequently do things which previously he would have scoffed at.

"This fellow—Jimson, I think his name was —underwent such a chage of heart as regards his attitude toward anything that is propelled other than by horsepower that even he must have marvelled at the transformation. Jimson was an arrant motorphobe, one of those kind that'll sit by the fire at night and damn automobiles and everything connected with them and during the day, if perchance he should meet one of the blasted things on a narrow road, would walk his horses mile after mile in the middle of the road to prevent the motorist from passing. I have heard that he used to throw broken bottles in the road to cut the tires. Anyhow, that is another story.

"I ran across Jimson one afternoon last spring. I then had a motor bicycle and left Manhattan one morning intending to tour to Lake Hopatcong and get back in time for dinner. It is only a trifle over forty miles, fine roads, although somewhat hilly. There is one noticeable difference between New York and Jersey. The sun may be shining as brightly as it knows how here, but cross the river and you will likely find it raining cats and dogs—that is, if you are contemplating a trip.

"I started out bright and early that morning with just such conditions as these. Found it had been raining when I got to Montclair, and between there and Dover the roads were almost as slippery as the Vanderbilt course two days before the exterminating trials. Naturally, my little motorcycle had a hard time of it, but I determined to get to Hopatcong. To make a long story short, by the time I was ready to point my nose toward Manhattan it was growing dusk. At that time of the year none of the summer hotels are open, and I wondered what I would do for a bed. I remembered a promising looking farmhouse on the road which skirts the southeast end of the lake, so I determined to apply for shelter.

"A garrulous type of scythe wielder was drawing a bucket of water from a well in the yard when I shut off the power and rode up. I told him my quandry and asked for shelter overnight. He looked me over, and after damning my 'engine bisickle,' as he called it, said 'he reckoned he'd eat me and sleep me.' I was not particular about offering myself as a living sacrifice to appease his appetite, but discovered later the expression was only one of the idioms of that part of Jersey.

"The farmer proved rather interesting, and told me lots of stories of the fun he had been having with the automobilists who came through that section. Rather devilish fun, I think. I asked him for my bill the next morning, and was informed that it was nothing for food and bed, but that he would have to charge me five 'bucks' for letting my motorcycle stay in his shed. Said he had taken chances on its blowing up. That was his way of getting even with one of the genus who wear leather coats and always have dirty fingernails. I paid it.

"The next time I dropped in to see Jimson I held the reins over a piece of horseflesh. He was delighted this time, and gave me a 'corking' good dinner, fed my horse and had his boy rub him down and lots of other things. That was the only way to travel, according to his motorphobic notions. I told him the next time I came to the lake I expected to have an automobile (in fact, I was only waiting for the dealer to get it from the factory) and would take him out riding. Said he'd be dummed if he'd go.

"I got my car in August, and soon learned its good points. It was a beauty, too. Could run forty or better on the high and could simply eat up the hills. One Saturday I determined to run up to the lake over Sunday. Autumn is the best time of the year there. Just cool enough to make touring a pleasure and not enough vehicles on the roads to raise any dust to speak of. And the scenery is well worth the trip. Seems almost sacreligious to speak of it.

"Went up fine and breezed into Jimson's farmyard just in time for supper. He looked glad enough to see me, though sorry to see the 'bubble.' Wouldn't even let me run it in the carriage shed overnight for fear it would blow up. The weather promised to stay clear for that night at least, so I did not raise any objections, and satisfied him by running it down close to the lake. I spent all the evening arguing with him, and I expect his slumbers that night were rudely disturbed by a conglomerated mixture of spark plugs, coils, levers, radiators, pumps, tires and all the other component parts of a machine. I finally extracted a half promise from him to let me take him for a little ride in the morning, if I would not go faster than three miles an hour. Think of it, and fifty nearer my gait!

"The next morning, after watching me run the car up and down the road several times to see that it was all right, Jimson climbed in and we started toward Dover on the low. We had gone two or three miles when Jimson turned to me and said: 'Is this as fast as your old trap can go? Why, my old sorrel mare can do better.' I did not say anything, but shoved my lever up another notch. She responded beautifully, and we were soon making fifteen or sixteen. A family carryall, with apparently the whole family snugly tucked in the seat, was laboriously being pulled up the hill ahead of us. I gave the wheel a sharp turn, and we went by them as nicely as you please. Jimson glanced around, and I inquired if he knew them. Yes, that was Neighbor Brown and his family going to church. We passed two or three more of Jimson's friends, and I thought I detected an exultant look on his usually impassive face.

"About two miles before you reach Dover there is a broad, wide boulevard where every Sussex farmer who possesses a horse that he thinks can 'go some' is wont to try him out of a Sunday morning. It was rather early when we sighted the western end of the speedway, and a horseman was just turning his animal around for a brush down the pike.

"'That's Si Harkin and Mary Ellen!' shouted my companion.

"'Who in blazes is Mary Ellen?' I jerked out, not being very familiar with every old nag in the country.

"'Mary Ellen, sired by Kentucky Millie; can do a mile in 2:03 flat. There he is starting her up. Ah, you'll never catch her. See, she's is running away from you!'

"There was no mistake about it. Mary Ellen was 'hiking it' up the pike. But I knew my car. Up to then I had been running on the second speed, but I now moved it up another one. It was easy to see we were gaining on the horse and sulky. Si Harkin or whatever his name was looked back about this time and saw we were trying to overtake him. He gave a defiant yell and plied the whip.

"Suddenly a change came over Jimson. We were doing then about thirty. He jumped to his feet, jerked off his hat and yelled like a crazy man. 'Go on! Don't let that critter get away from us. He did me on a hoss deal. Sick it to her, boy! Go on! Go on! Faster! Faster! You'll get him yet!'

"All this time we were overhauling Si and Mary Ellen at a rate that an express train would look coming on if you walked to meet it, but Jimson could not see that. I threw the throttle open all the way, and with a jerk the car bounded forward. My companion sat down even more suddenly than he had gotten up. We went by Mary Ellen like a shot out of a gun, and when we finally slowed down sufficient to look around with safety Jimson's enemy and his piece of horseflesh were hardly visible back down the road.

"We went back home on the high all the way, and Jimson never remonstrated once. He seemed to be thinking deeply."

The Occasional Attendant struck a match and lighted his cigar, which had long since gone out.

"I accidentally picked up a Dover paper the other day and read in the Hopatcong items that 'Mr. Robert Jimson, one of our respected townsmen, was arrested in Dover yesterday and fined $10 and costs for exceeding the speed limit with his new automobile.'

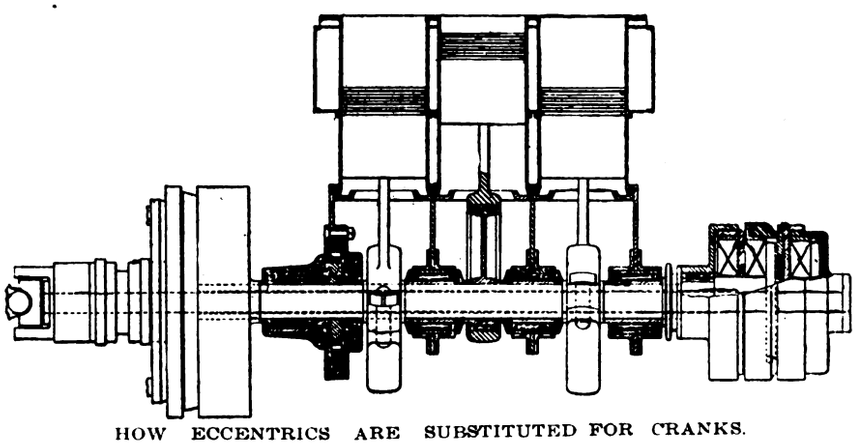
"Funny thing, this human nature, isn't it?"

W. A. Mills has been elected president of the Nichols Auto Transit Co., a Connecticut corporation, organized at Nichols to conduct a stage line. The other officers are: E. E. Norton, vice-president, and N. B. Curtis, secretary-treasurer.

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Lanchester's Substitute for Cranks.

Probably the most novel if not the most practical modification of motor design is that conceived by F. W. Lanchester, an Englishman, better known as the builder of the Lanchester car, which has been on that market for several years. A patent has recently been granted to cover the idea and it is worth while noting that the inventor



HOW ECCENTRICS ARE SUBSTITUTED FOR CRANKS.

states therein that his creation has for its object "improvements in the construction of combined motor and change speed mechanism, by which greater simplicity, compactness and directness of transmission has been obtained." How closely the invention itself fulfills this description of its raison dêtre, as shown in the accompanying part sectional drawings may be judged from the following:

As will be apparent at a glance, the chief difference consists in the use of eccentrics in place of cranks. They act upon a large hollow shaft through which a transmission shaft runs and is so arranged as to be coupled to the motor shaft itself either by a direct clutch or a planetary gear, this transmission shaft being employed for the propulsion of the vehicle. "In one mode of carrying the invention into effect, a motor is constructed of the ordinary reciprocating type, but in lieu of crank shafts a large hollow shaft and eccentric straps are employed," reads the specification, from which it will appear that the inventor has some other changes in the motor itself in mind. Excessive friction between the eccentric straps and the shaft is prevented as far as possible by the use of rollers held in position by a cage between the eccentric and its strap in the manner of a roller bearing. This is shown in detail in the small cut.

The friction clutch employed is of much the same type as that generally in use and is placed at the flywheel end, as is customary. Its function is likewise the same, that is, of coupling the main and transmission shafts together except that in the present instance one encloses the other.

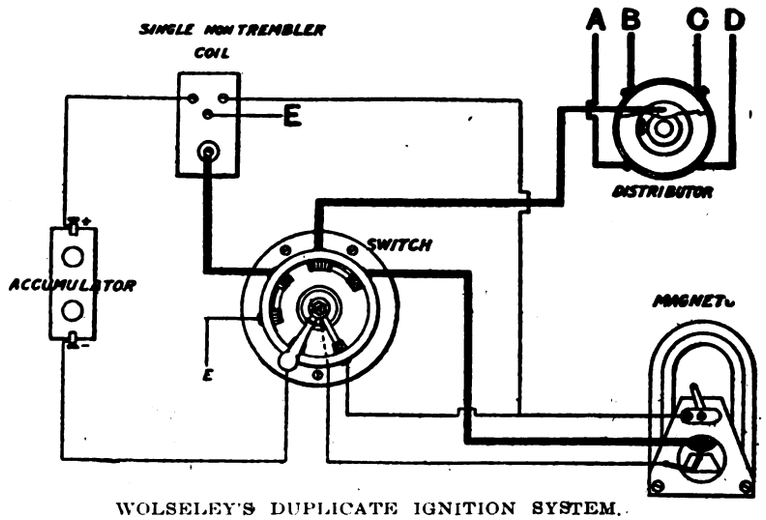
But instead of being placed behind the clutch, as is usual, the change speed gear which is of the epicyclic or planetary type, is placed at the opposite end of the shaft. This gives two or three speeds forward and reverse.

On the whole, after careful consideration of all the features of the invention it is difficult to agree with its creator's claims as to greater simplicity, compactness and directness of transmission, particularly in view of the fact that none of the steps employed in the ordinary form of transmission have been eliminated and one of doubtful efficiency has been added.

Wolseley's Duplicate Ignition System

Duplicate ignition reduced to its lowest terms terms would appear to be the most fitting title for the ingenious combination of wiring adopted for their 25-horsepower Sidely car by the Wolseley Tool and Motor Co., so as to render a high tension magneto and accumulator system instantly interchangeable without undue complication.

It will be at once noticeable from the accompanying diagram of the connections that they involve a minimum number of leads whether from one side of the system or the other. The employment of a single non-trembler coil on both sides represents an innovation which, while probably not to be credited to the concern in question as original, is one that will doubtless find many followers—in fact, the entire duplicate system represents as close an approach to the millennium of simplicity, combined with reliability, as has thus far been made.



WOLSELEY'S DUPLICATE IGNITION SYSTEM.

A Simms-Bosch high tension magneto is employed, but modified to suit the requirements of the case by the omission of its distributor. A high tension distributor, common to both sides of the system, is fitted to the cam shaft, as is customary. The make and break contact on the magneto is used both for its own and the battery circuit, and thus enabling a non-trembler coil to be used.

To start the engine the driver places the switch handle over to the side marked battery; this operation puts the battery in circuit with the magneto make and break and a single-cylinder non-trembler coil, at the same time breaking the magneto low-tension circuit; it also joins up the single high-tension terminal of the coil to the feeder on the four-cylinder distributor. The engine starts readily on this ignition, and when once running the switch is brought over to the magneto position. In doing this the battery is cut out of circuit, together with the coil, and the magneto armature windings are joined up to the make and break, and its high-tension wire to the distributor. This the makers claim can be done on full speed without missing a single explosion.

When a Pocket Magnet Proved Handy.

A motorist, relating some of his unpleasant experiences, tells how he was puzzled for some little time to extract from a cylinder the broken fragments of a valve which had gone to pieces on the road. Finally, after fishing about for a time with a bit of wire and succeeding in removing all but a couple of small bits, he was about to give up in despair and leave them to the tender mercies of the piston, trusting to luck to get him home without having them to stave a hole in it or the cylinder, when he bethought him of the action of a magnet. Purchasing one of the toy kind at a nearby store, he succeeded in removing the pieces of metal without further trouble. All of which simply goes to show that at times it is of considerable value to one to have in the kit a screwdriver which has been magnetized.

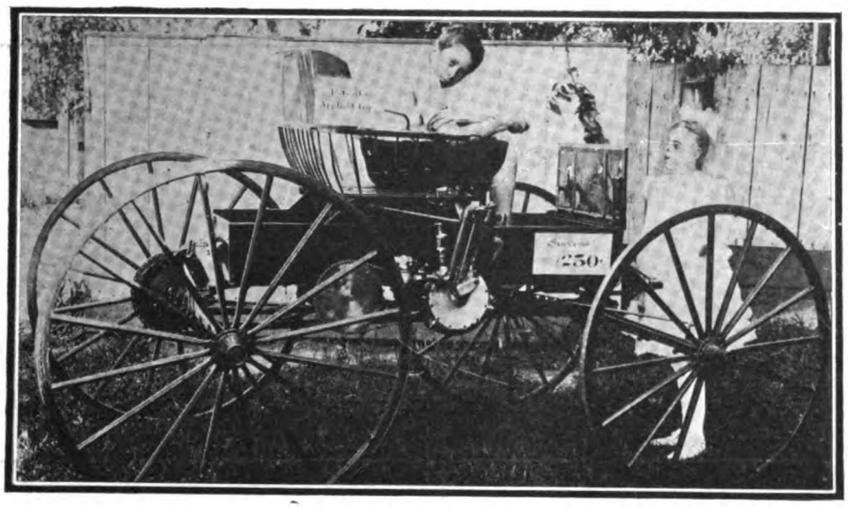
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HERE'S THE HORSELESS BUGGY

St. Louis Lawyer Responsible for it and He Prefers it to a Touring Car!

While a large part of the world has been awaiting and talking about the "popular priced automobile," John C. Higdon, a patent attorney in the Missouri Trust Building in St. Louis, Mo., believes he has hit upon that very article.

The accompanying illustration shows it to be a pure and unadulterated horseless carriage; in fact, Mr. Higdon's device is rather a motor attachment for application to buggies and light wagons from which the shafts have been removed. It comprises a vertical single cylinder, two horsepower Merkel motor and a planetary transmission affording two speeds forward and a reverse.



HIGDON'S HORSELESS BUGGY.

Higdon, who has been dabbling with automobile inventions since 1896, styles his creation the Success automobile and is arranging to market it at $250. He has used it for two months and states that it has proved equal to all the hills in his vicinity and capable of a speed of 25 miles per hour. He attributes this to the large wheels and steel tires. There is nothing diluted in the inventor's faith in his rig. Hear him:

"Although I can take my choice of large touring cars, yet, for my own private use, I actually prefer this small runabout on account of its extreme simplicity and lightness, as well as economy in operation."

Old Tire in New Guise.

Here is the latest addition to the ranks of the absolutely non-puncture, never-wear-out rubber tire that is as good as the pneumatic, described in the usual laudatory, arrival of the tire millennium style accorded every new invention by the daily scribe:

"The weight of the car comes on the tread of the outer tire, the rubber plug is forced upward and compresses the inner tube. The resiliency resulting from the motion is claimed to be free from all elements of friction and to be as great as that obtained through the use of the pneumatic tire.

"A set of tires constructed after this plan has been run something like 7,000 miles, and shows little signs of wear. It is claimed that cuts in the outer tire make le s impression than on solid tires, and punctures, which would ruin pneumatic tires, cause no damage. In addition to the other advantages claimed, it has the peculiar advantage that its user will always be able to get home. Even should anything occur to put the pneumatic part of the tire out of commission, the outer tire and the plug form an excellent cushion tire."

To Start from the Seat.

Although the "self-starting engine" is yet to be seen, and the motor which can be started from the driver's seat has only made its appearance in limited numbers, and that in the case of the low powered machines, the public is still ready to accept anything looking toward the desired result. Hence the device of the British maker who has transferred the starting handle from the front of the car to the dashboard should be received with favor. The machine is a light four cylinder car, and the arrangement permits the driver to "crank up" without leaving his seat, though the amount of labor usually involved in the process is in no way lessened and suggests a rather awkward position for the man doing the cranking.

New Arrangement for Brakes.

A novel arrangement of the rear wheel brakes has been perfected by a foreign manufacturer who is exhibiting at the Olympia show, in which the brake drums, which are of the usual pattern, are affixed directly to the wheel hubs instead of being attached to the driving sprockets and the spokes. They are placed inside the sprockets next to the wheels, and the studs which support the former pass through holes in them which are drilled out to a size larger than that of the studs, so that the strain of the brakes is taken on the hubs and not on the spokes.

CONCERNING CARBIDE

Some Interesting Facts About its Discovery, Production and Peculiarities.

It is erroneously supposed by many people that calcium carbide, as commonly known, is found in a natural state, as is a product of mining operations, but there is apparently no record of a natural product in any way closely resembling carbide of calcium ever having been discovered, says the Motor Review. It is true that the French chemist Bertholet—who in 1862 first discovered acetylene—has publicly stated that it may have been the action of a kind of carbide produced naturally, which led to the formation of petroleum deposits, but this, of course, is a theory which up to the present has received no practical substantiation.

That mining accidents have been brought about owing to the action of water on natural calcium carbide is quite out of the question. The gas found in coal mines and to avoid the danger from which Sir Humphrey Davy invented his safety lamp, is quite a different gas from acetylene. It is represented by the formula C4, and, according to Newth, "it is one of the products of the decompositions which have resulted in the formation of the coal measures." Acetylene is symbolized by the formula C2 H2. As furthermore showing the erroneous nature of such a supposition, the Davy lamp behaves quite differently when acetylene surrounds it and when fire damp is in question.

The molecular weight of firedamp is only 16, and its density only 8, as compared with 26 and 13 respectively for acetylene.

The chemical name of fire damp is methane, and some chemists state that fire damp may have been caused by the action of water for centuries upon carbide of aluminum.

Sir Humphrey Davy was a chemist of the first magnitude, and if he had found acetylene in a mine he would have given it its proper chemical formula, whatever name he might have called it by.

Calcium carbide is formed by the fusing of unslaked lime and carbon in an electric furnace, and at a sufficiently high temperature to render both into a molten condition.

Commercially speaking, the manufacture of calcium carbide has not been a profitable venture, but few of the manufacturers having reaped much benefit from this commodity except so far as regards the last two years.

Huge sums of money have been lost upon it, due really to professors in the early stages of the industry arguing that rough slag usually found around pit mouths was suitable, and that carbide could be produced for from $20 to $25 per ton. Taking the cue from these professors, works sprang up in various parts of the country where the raw material was to be found in great profusion. One of these factories started near Birmingham,

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England, and had a very short life, indeed, the material in the district being found quite unsuitable, coupled with the fact that steam power had to be employed for generating the electric current for fusing the materials, soon sealed the fate of the company.

Another factory which enjoyed a much longer existence was formed at the Falls of Foyers, in Scotland. Here the founders argued that not only had they the raw material in profusion, but water power also. It was soon discovered that here again the materials of the district were unsuitable for the purpose. The company then fell back on coke procured from the corporation, but finally the raw materials for this factory were drawn from South Wales.

As a commercial speculation the venture was also a failure, and the manufacture of carbide was ultimately abandoned.

The United Alkali Co. also turned their attention to carbide manufacture, and, although the concern ultimately succeeded in making carbide of very good quality, the manufacture of it has been abandoned, so that at the present moment there is actually no carbide manufactory in Great Britain. One or two works have been started in Ireland, but these do not appear to be in a flourishing condition.

In proof of the error contained in the statements of those professors, it has been found that only the very best qualities of coke can be used for the purpose—in fact, the carbon used in the manufacture of calcium carbide should be absolutely free from all impurities whatsoever.

Throughout the whole of the carbide industry only two firms have so far succeeded in paying a dividend, one a firm in Italy and the other the Wilson Carbide Co., of America, calcium carbide being first brought into commercial use by Wilson's discovery in 1888 of the modern method of preparing this commodity. The firm that bears this discoverer's name harness the power for their works from the falls of Niagara.

The Wilson Co. were the original patentees of calcium carbide, all other firms having to manufacture under license from them, and, although the Fallsl of Foyers firm was one of the licensed factories, they claim to have been the first to produce a marketable product. As a matter of fact, they did succeed in producing the finest carbide in the world.

This unfortunate state of affairs was due, no doubt, to the fact that the professors had educated the minds of the public to the idea that carbide could be bought at a price at which it was ulitmately proved it was impossible to produce it.

Carbide in its raw state is most sensitive to atmospheric action, and even when packed in airtight tins. Air is, of course, present with the carbide in the packet, and generation of gas is practically always going on, so that the longer that carbide is kept in stock after manufacture the more it deteriorates.

With a view to overcoming this serious defect various more or less successful attempts were made to minimise this action by coating carbide with certain preparations which would neutralize and protect it from the action of the air.

Among these preparations paraffine and sugar mixed are the most generally adopted mediums used for this purpose, though in the case of one or two well known firms secret formulæ of their own are employed to effect the same object.

There is no doubt that the coated carbide has an advantage over the raw article. Coated carbide can be kept in stock without any perceptible deterioration, and great economy is no doubt effected by its use, as by reason of the protective qualities of the medium with which it is coated, water only attacks the surface of the carbide, instead of passing straight through it, as in the case of the raw carbide. Thus, owing to water having a much slower effect on the coated carbide, decomposition is much slower and ceases within a very short time after the water is turned off, and its economic properties are shown by the fact of being able to relight the lamps repeatedly so long as any of the carbide remains.

In the raw or uncoated state it is impossible to realize economy, for it so rapidly and easily absorbs moisture, that even after the water supply has been turned off, generation of gas still goes on until all the moisture has been used up, which, as a rule, only ceases when the whole contents of the container have become utterly decomposed, and, of course, of no further use for the generatiton of acetylene gas.

In using calcium carbide to provide illumination for bicycles or motor vehicles, and where there is no means provided of immediately shutting off the gas from the burners, in conjunction with shutting off the water supply, it is common knowledge and a cause of great annoyance that the light still goes on and only dies out very gradually, and that not until the burners have become carbonized or sooted up, necessitating taking out and cleaning them before the lamps can again be used.

Carbonizing of the burners and its cause is readily explained by the fact that immediately the water is turned off and ceases to act on the carbide pressure also ceases, not suddenly, but gradually, so that the light gradually dies down to a mere glimmer, and all the time owing to lack of proper pressure the gas does not rise and burn off, but instead clings to and condenses on the burners, where it is but half burned up, and in that way carbonizes in the passage of the burners.

Pressure plays a most important part in acetylene lighting, owing to the fact that acetylene gas is about the same density as the atmosphere, in which respect it is very different to coal gas. The latter being lighter, always rises to the highest point. Therefore, to insure keeping the burners clean, some safe and suitable means should be adopted whereby immediately the lamps are finished with, the lights may be put out and the course of the gas diverted from them. Ignorance upon this important point as to weight and density of acetylene gas is often followed by serious consequences, illustrative of which is the fatality which occurred in Great Britain about a year ago. A householder, whose residence was illuminated by acetylene gas from a generator fixed in a room in the house, discovered a leakage caused by a broken joint in the receiver. He at once—as he thought—emptied the receiver and called in a plumber to s lder up the joint. Now, although every means of escape had been provided for the gas, yet, owing to its being of similar density to air, the gas had not exhausted itself beyond the air pressure, with the result that, while the plumber was at work the heat of his soldering iron ignited the gas, causing thereby a frightful explosition, which killed the man, and would also have claimed the owner had he not turned a moment before, being attracted by his child which entered the room.

Another case illustrative of this peculiarity of acetylene gas of lingering and ultimately exploding is that of an experiment carried out in Germany. Acetylene gas had been passed into a large iron tube for experimental purposes. The tube was afterward placed out in the open, and both ends left open for the escape of the gas. After several days had elapsed a lighted match was thrown down near the tube by a smoker, with the result that an explosion caused the death of one or two people near, who were struck by flying pieces of the burst tube.

May be First Gasolene Railway.

Frederick County, Md., will likely have the first railway on which gasoline motor cars will be used exclusively. The railway between Frederick and Thurmont, which the Washington, Frederick and Gettysburg Railway Co. proposes to build, was originally intended to be an electric road, but the use of gasolene motor cars has now practically been decided on.

The officials of the Washington, Frederick and Gettysburg Railway Co. have been in correspondence with the officials of the Union Pacific Railway Co., who have had charge of the manufacture and operation of the gasolene motor cars used on that road's suburban lines in Nebraska, and it has been decided that they are well adapted for use on the proposed road between Frederick and Thurmont. The use of the cars will make the road, both in construction and operation, much less expensive than a trolley line, the need of an electric equipment and power plant being obviated.

Garage is a French word, pronounced in various ways, according to the experience of the person wrestling with it, but in any guise it means a boarding stable for automobiles. The owner of a healthy garage is sometimes able to get his own board out of the business, and to have his washing done occasionally also—is the comment of one to whom the full meaning of the word is not entirely new.

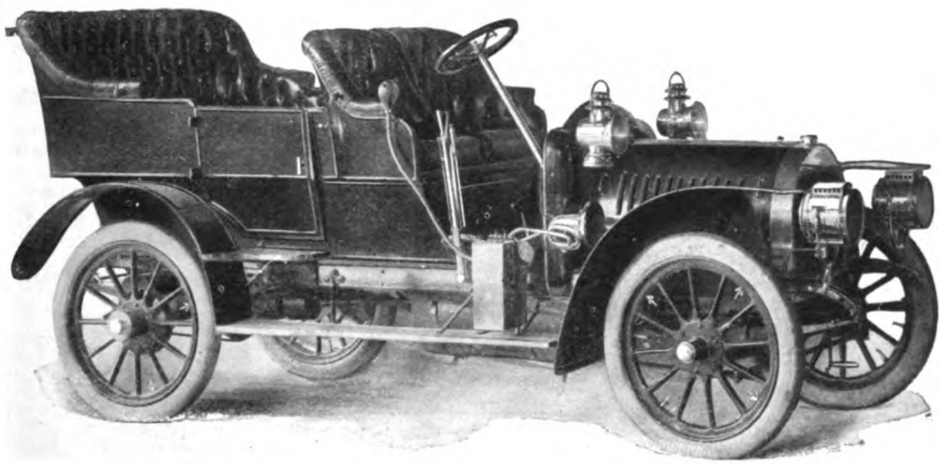
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The Week's Patents.

804,332. Gas Engine. Charles J. Moody and Victor E. Moody, Elgin, Ill. Filed Sept. 3, 1904. Serial No. 223,234.

Claim.—1. In a hydrocarbon-engine, the combination of a drum cylinder, inwardly extending abutments dividing the cylinder into chambers, a piston provided with blades extending into the chambers, a rocking or oscillating shaft on which the piston is mounted, a main rotating shaft and a connection between the rocking or oscillating shaft and the rotating shaft for transforming the rocking or oscillating movement into a rotary movement, supply and exhaust passages leading to the cylinder-chambers, valves controlling the supply and exhaust passages, a short rotary stud-shaft entered into and pivoted within the end of the oscillating shaft and cams on the rotary shaft for successively operating the valves controlling the supply and exhaust passages, substantially as described.

804,368. Resilient Tire. William F. Beasley, Plymouth, N. C. Filed Dec. 15, 1902. Renewed Jan. 9, 1904. Serial No. 188,405.

Claim 1.—A resilient core for a tire consisting of a sinuous band of rubber, having an independentely and separtly formed strengthening-wrapping vulcanized thereabout, the truss-walls formed in the band being unconnected at their sides except by the independently and separately formed wrapping, substantially as described.

804,369. Resilient Tire. William F. Beasley, Plymouth, N. C. Filed March 24, 1903. Renewed April 14, 1905. Serial No. 255,655.

Claim.—1. A resilient core for a tire, consisting of two separately-formed strips, each consisting of a series of trussed walls, the said strips being united at their inner faces whereby a core is formed having notches in its inner and outer surfaces ad apertures in its centre, substantially as described.

804,375. Steering Mechanism for Automobiles. Herbert H. Buffum, Abington, Mass., Assignor to Electric Vehicle Company, Jersey City, N. J., and New York, N. Y., a Corporation of New Jersey. Filed May 7, 1902. Serial No. 106,246.

Claim.—1. In a steering mechanism for motor-vehicles, the combination of a rotating sheering-shaft having a screw, a rocker connected with a steering-wheel of the vehicle, a nut on said screw fulcrumed on said rocker, a bearing-guide, and a bearing for the shaft secured against axial thrust and having an axial thrust-resisting laterally-sliding connection with said guide.

804,421. Variable-Speed Transmission for Vehicles. George W. Marble and William R. Donaldson, Chicago, Ill. Filed Dec. 7, 1904. Serial No. 235,908.

Claim.—1. A reversible speed transmission device comprising a driven shaft, parallel friction-disks rigidly secured thereon, a pivotally-supported motor, a driving shaft therefrom projecting between the disks, a driving friction-wheel on said shaft, a bearing for the driving-shaft adjustably engaged on the driven shaft, and a level adapted to swing said driving friction-wheel into engagement with either friction-disk.

804,438. Transmission Mechanism. Charles G. Simonds, Schenectady, N. Y., Assignor to General Electric Company, a Corporation of New York. Filed June 23, 1904. Serial No. 213,777.

Claim.—1. In a transmission mechanism, two alined shafts, gears carried at adjacent ends of said shafts, a member journaled between said shafts and in line therewith, a shaft extending through and journaled eccentrically in said member, gears carried at the opposite ends of said shaft and engaging the first-named gears, and means for holding said member stationery and for locking it to one of the first-named shafts.

804,495. Differential Gearing. Joseph G. O'Kelly, Chicago, Ill. Filed Feb. 13, 1902. Serial No. 93,902.

Claim.—1. In a differential gear, a main shaft, an interior gear loose on said shaft, a circular plate loose on said shaft and adapted to revolve with the interior gear, means co-operating with said internal gear for revoving said plate when said interior gear is disengaged therefrom, comprising idle gears carried by said plate and engaged by said interior gear, and a king-gear loose on said shaft, in combination with devices for communicating the motion of said circular plate to said shaft.

804,577. Wheel for Vehicles. Joseph M. Boulanger, Revigny, France. Filed July 8, 1904. Serial No. 215,732.

Claim.—1. In a wheel, a hub provided at one end portion with a fixed spoke-retaining means and at the opposite end with exterior screw-threads, a spoke-retaining member moveable along said hub and provided on its outer face with indentations or recesses, an outer nut engaging said screw-threads and operable to adjust said spoke retaining member along the hub, and a washer interposed between said nut and said spoke-retaining member, said washer being provided with means for engaging the indentations or recesses of the latter.

804,489. Carburetter for Explosion Motors. Giovanni Enrico, Torino, Italy. Filed March 9, 1904. Serial No. 197, 211.

Claim.—1. In a carburetter for explosion-

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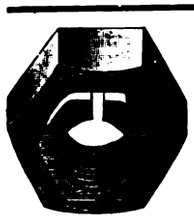
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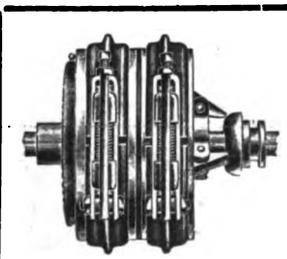


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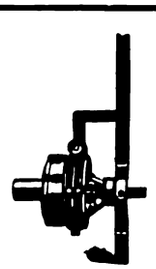
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motors, a combination of an oil-reservoir, a closed vaporizing vessel for vaporizing oil in the absence of air, a plurality of tubes arranged in said vaporizing vessel, means for introducing the oil above the tubes above the level of the oil to prevent the latter from being siphoned into the vaporizing vessel, said means being in position to allow the oil to gravitate over said tubes, means for heating said tubes for maintaining the vapor thus formed at a high temperature, a mixing-chamber disconnected from said vaporizing vessel and outside the same, and a pipe leading from said vessel and terminating within said chamber and having a tapered perforated end.

804,605. Vehicle-Wheel. Guy G. Jackson, Allegheny, Pa. Filed March 28, 1905. Serial No. 252,457.

Claim.—1. In a vehicle-wheel, the combination with a hub having a polygonal exterior and as embracing-flange, of a corresponding adjustable flange, an outer wheel composed of disks located between said flanges and provided with internal polygonally arranged cushion-bearing elements, and a compressible cushion having inner and outer polygonal arranged faces adapted to bear against the hub exterior and said wheel-bearings, substantially as set forth.

804,613. Vehicle-Tire. Frank A. Magowan, Trenton, N. J. Filed Aug. 12, 1905. Serial No. 273,969.

Claim.—1. A pneumatic tire comprising an outer tube or cover, a series of inner tubes nested one within the other, and a set of inflation-valves one for each of said inner tubes; said valves having stem portions nested one within another.

804,701. Pneumatic Tire. Olin M. Bigger, Holt, Cal. Filed June 5, 1905. Serial No. 263,735.

Claim.—In a pneumatic tire, the combination of an outer tube, a plurality of independent inner tubes, a self-closing air valve for each of said inner tubes, a self-closing main valve, a plurality of tubes leading from said main valve one of which is connected to each of said first named valves, each said tube being separably connected to the valve to which it leads.

804,740. Variable-Speed Gearing. Columbus K. Lassiter, Schenectady, N. Y., Filed March 11, 1905. Serial No. 249,620.

Claim.—1. In a variable-speed gearing, a driving element, a driven element, change-speed gears driven by said driving element, a clutch for directly connecting the driving element with the driven element, a transmission-gear connected with the driven element and adjustable in two planes, said gear being adapted when adjusted in one plane to throw the clutch into or out of operation or to be positioned opposite one or the other of the change-speed gears and when adjusted in the other plane to be moved into or out of connection with the alined speed-gear, and means for adjusting said transmission-gear.

804,783. Circuit-Controller for Explosive Engines. Richard Varley, Englewood, N. J., Assignor, by Mesme Assignments to The Autocoil Company, a Corporation of New Jersey. Filed Oct. 31, 1904. Serial No. 230,692.

Claim.—1. A circuit-controller for explosion engines comprising a normally open circuit-maker and a normally closed circuit-breaker adapted to operate upon the same circuit, means whereby the same will be actuated successively by one shaft and means for simultaneously and unequally shifting the points in the rotation of the shaft where said devices shall be operated.

804,850. Article of Manufacture Comprising Leather and Rubber Bodies. Charles L. Ireson, Boston, Mass. Filed March 3, 1905. Serial No. 248,281.

Claim—1. The new article of manufacture herein described, the same comprising a composite product of tanned leather containing sulphur, rubber previously vulcanized by heat and a cold vulcanized uniting section between them combined with and knit into the section of the leather and the section of the rubber adjacent to it.

2. The improved article of manufacture comprising a body of leather containing sulphur, a body of rubber vulcanized by heat, and an intermediate, uniting body, cold vulcanized with the leather and with the rubber.

804,851. Method of Attaching Rubber to Leather. Charles L. Ireson, Boston, Mass. Filed March 3, 1905. Serial No. 248,282.

Claim—1. The method of uniting leather and rubber herein described, consisting in taking a tanned leather containing sulphur as one body, rubber previously vulcanized by heat as another body, coating the surfaces of each of the bodies which are to be brought into contact and united, first with a thin coating of ordinary rubber cement, and second with a vulcanizing agent adapted to vulcanize or assist in vulcanizing the rubber cement and its adjacent sections, when the two surfaces are brought together, and then subjecting both bodies and the intermediate vulcanizing elements to pressure at atmospheric temperature, whereby the vulcanization takes place under pressure.

804,853. Method of Attachment of Rubber and Leather. Charles L. Ireson, Boston, Mass. Filed March 17, 1905. Serial No. 250,561.

Claim—1. The method of uniting rubber and leather herein described, the same consisting in treating leather freed of the oil or other elements which attack or are injurious to rubber when the leather is combined therewith preparing such leather for the vulcanizing process and combining such leather chemically and mechanically, under heat and pressure, with a body of rubber or rubber compound by means of an interposed, independent sheet of vulcanizing rubber compound.

804,854. Art of Vulcanizing Leather and Rubber. Charles L. Ireson, Boston, Mass. Filed March 17, 1905. Serial No. 250,563.

Claim—1. The method of uniting leather to rubber, comprising the coating or covering of the leather with a waterproof and heat resisting envelope and then subjecting the leather and rubber with which it is to be united to pressure and to a moist heat in a vulcanizer.

804,867. Propelling Mechanism for Vehicles. Jefferson F. Knowlton, Canton, S. D. Filed January 23, 1905. Serial No. 242,433.

Claim—1. Propelling mechanism for vehicles comprising upper and lower frames, interposed springs connecting said frames and supporting the upper one, a motor and adjunctive parts and a steering shaft mounted upon the upper frame, steering wheels supporting the front of the propelling mechanism and connected with the said steering shaft, couplings for partly supporting the rear end of the lower frame and loosely connecting it with the vehicle to be propelled, a traction wheel mounted upon the rear portion of the lower frame and movable therewith and supplementing the action of the couplings in carrying the weight of the propelling mechanism, and connections between the motor and the said traction wheel.

804,891. Vehicle Tire. Arthur J. Slade, New York, N. Y. Filed July 19, 1905. Serial No. 270,383.

Claim—1. A vehicle tire having an elastic body composed of concentric alternate layers of rubber and fabric compressed from circular form into elliptical shape and secured on the wheel in such compressed condition, substantially as described.

804,892. Protective Tread for Pneumatic Tires. James M. Small, Piqua, Ohio. Filed February 6, 1905. Serial No. 244,287.

Claim—In a protective tread for pneumatic tires, the combination with a wheel rim and the pneumatic tire, of a tread protector consisting of a strip of material of a tenacious nature provided with tongues uniformly projecting from opposite edges thereof, a series of metallic plates secured to said tongues, said plates terminating in hooks which lie within the recess between the rim and the tire on each side of said tire, said hooks having their open sides lying outwardly, tightening rings engaging said hooks on each side of the tire, and means on said rings for contracting them to uniformly tighten the protective tread around the tire.

804,896. Vehicle Tire and Rim. Will C. State, Akron, Ohio, assignor to the Goodyear Tire & Rubber Co., Akron, Ohio, a corporation of Ohio. Filed June 26, 1905. Serial No. 267,133.

Claim—1. A vehicle wheel comprising a rim and a tire mounted thereon, said rim having an offset along one side thereof forming a seat, an annularly formed member constituting a tire retaining means mounted in said seat, means in said tire to compress a wall thereof against aid annular member, whereby said annual member is locked in said seat, said compressing means being operable irrespective of the inflation of said tire.

804,926. Radiator. Benjamin Briscoe, Tarrytown, N. Y., assignor to Briscoe Mfg. Co., Detroit, Mich., a corporation of Michigan. Filed March 8, 1905. Serial No. 249,071.

Claim—1. A radiator, comprising a plurality of assembled multiple unit tubes, each tube being formed of a sheet metal blank, having its opposite edges joined to each other and fashioned with opposite zigzag walls to form a plurality of parallel passages; said units being joined to each other at both ends and spaced to form intervening sealed passages between adjacent rows of units being cross-connected between individual units, whereby circulation across the radiator is permitted in directions at right angles to each other.

804,946. Running Gear for Vehicles. William T. Hanna, Cincinnati, Ohio, assignor to Martha A. Hanna, Cincinnati, Ohio. Filed March 27, 1905. Serial No. 252,418.

Claim.—1. In a vehicle-gear the combination of a flexible frame consisting of two longitudinal and two transverse members pivoted together at their meeting points, the longitudinal members having horizontal hollow stud-shafts secured to them, means for changing the relative positions of the members of the frame, a cross bar pivoted at each end to the longitudinal members and adapted to support the vehicle-body, a driving-shaft carried by the cross-bar, hubs journaled upon the stud-shafts, short shafts journaled in the stud-shafts, means for connecting the outer ends of the short shafts and the hubs, means for coupling the short shafts and the driving-shaft, and means for rotating the driving-shaft.

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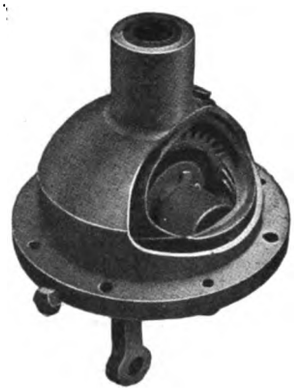
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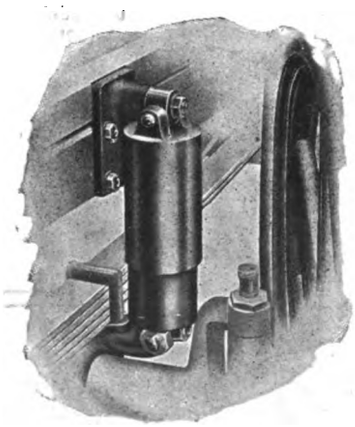
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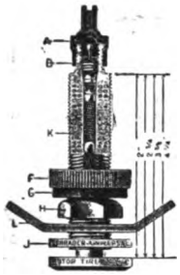
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Home Office & Factory, BRIDGEPORT, CONN.

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SIMPLE AND ABSOLUTELY AIR TIGHT.

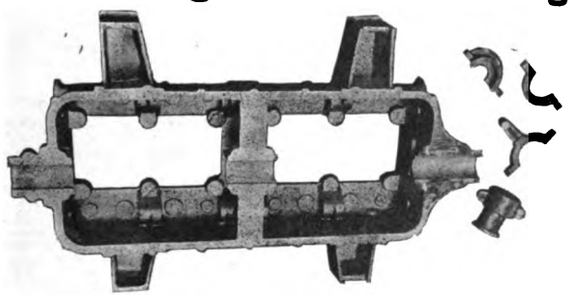
MOTOR TIRE VALVES, as shown in cut, are made in four lengths as shown. Cut is exactly half size of the 2 in. valve.

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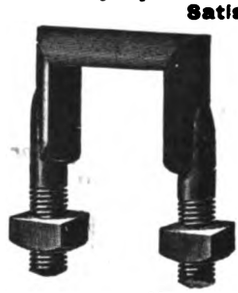
Parsons' Manganese Bronze Castings.



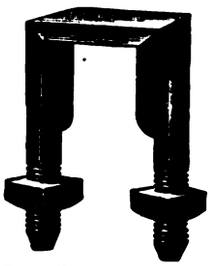
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We are prepared to estimate on your 1906 Forgings.

Satisfaction Guaranteed.



Thousands of our stock yokes are now in use, having been supplied to the leading automobile manufacturers.



Have you secured our prices?

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READ THIS!

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AUTOMOBILES,
Corner Fourth and Gay Streets,
Columbus, Ohio, September 5, 1905.

THE STEEL BALL CO., Chicago, Ill.

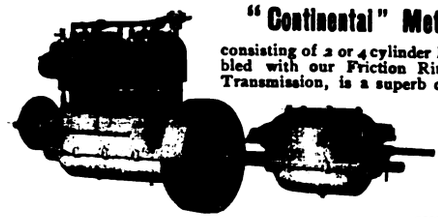
Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6 days endurance and economy run at Long Branch. In a run of 3202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of this we fully realize and its help in getting this record for our FRAYER-MILLER car.

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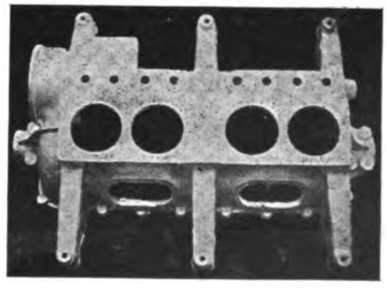
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SIZE "B," 1 in. b. & s. joint
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THEY ARE ALWAYS RELIABLE.
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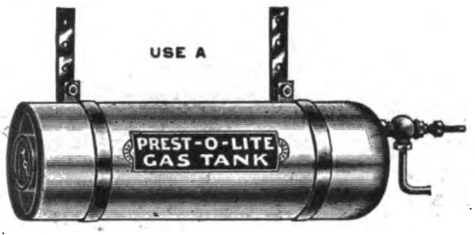
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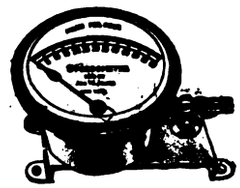
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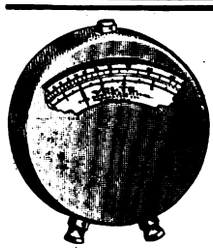


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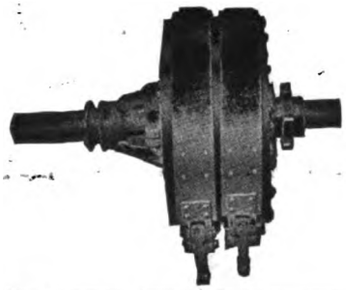
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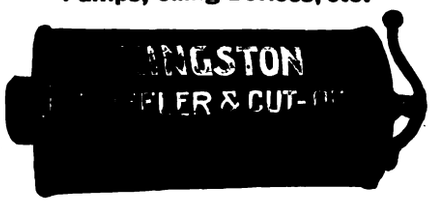
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Carburetors, Mufflers, Spark-Coils, Spark-Plugs, Steering Wheels, Pumps, Oiling Devices, etc.



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Pat. Jan. 29, 1901.



TRADE GRADOMETER MARK.

An instrument that will enable you to determine the grade per cent. you are ascending or descending.

Sent postpaid on receipt of price, $1.50.
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STANDARD ROLLER BEARING CO.,

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Steel Balls,
Ball Bearings,
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PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and, growing bolder, bursts forth in one pure sheen of grandeur.

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We make parts from your own design from either brass or aluminum

On Contract Basis.

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OUR CHAINS OUTWEAR ALL OTHERS

Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

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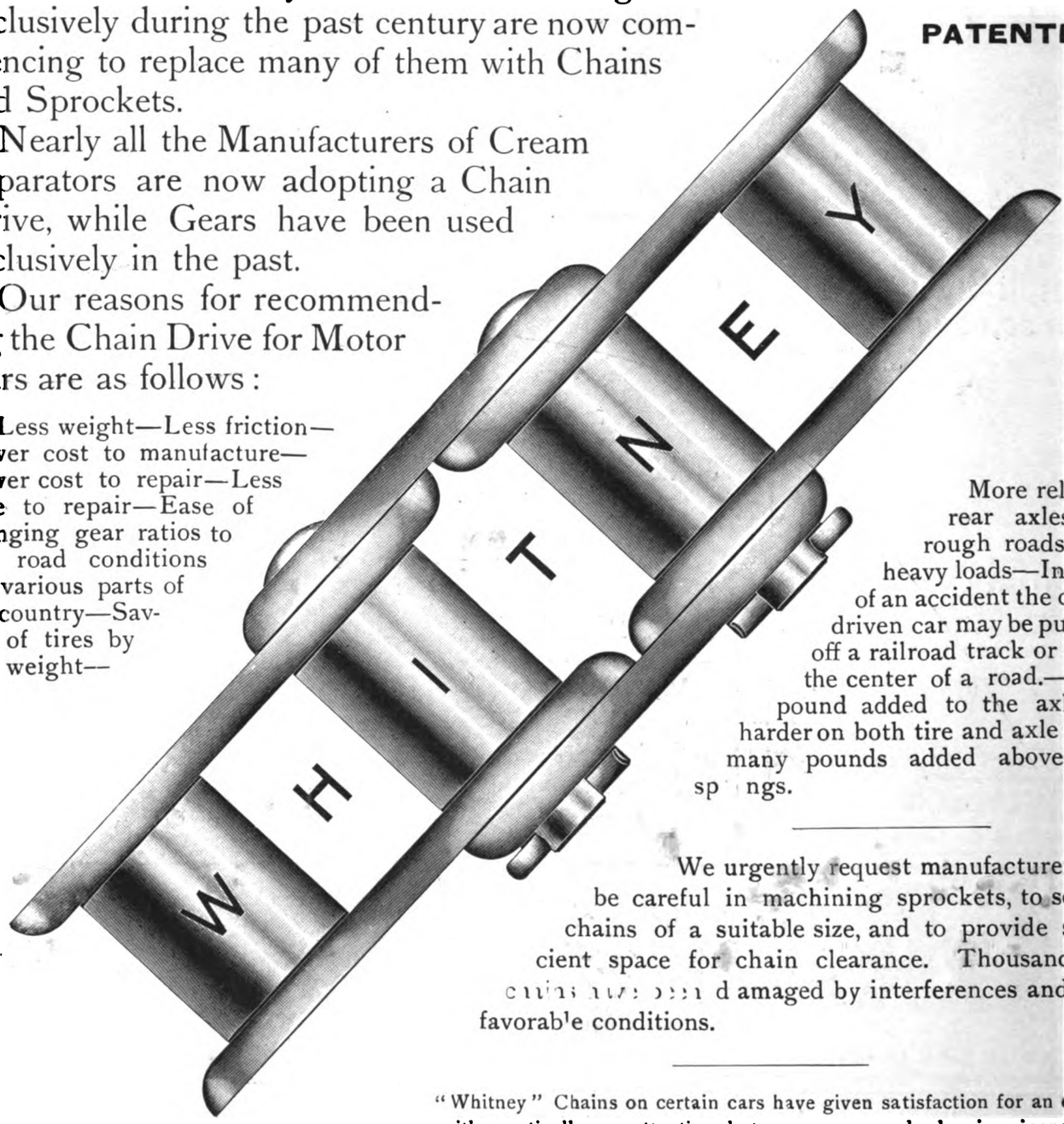
Builders of Machinery who have been using Gears exclusively during the past century are now commencing to replace many of them with Chains and Sprockets.

Nearly all the Manufacturers of Cream Separators are now adopting a Chain Drive, while Gears have been used exclusively in the past.

Our reasons for recommending the Chain Drive for Motor Cars are as follows:

Less weight—Less friction—Lower cost to manufacture—Lower cost to repair—Less time to repair—Ease of changing gear ratios to suit road conditions for various parts of the country—Saving of tires by less weight—

PATENTED



More reliable rear axles for rough roads and heavy loads—In case of an accident the chain driven car may be pushed off a railroad track or from the center of a road.—One pound added to the axle is harder on both tire and axle than many pounds added above the sp ngs.

We urgently request manufacturers to be careful in machining sprockets, to select chains of a suitable size, and to provide sufficient space for chain clearance. Thousands of chains are damaged by interferences and unfavorable conditions.

"Whitney" Chains on certain cars have given satisfaction for an entire season with practically no attention, but we recommend cleaning, inspecting and lubricating a number of times a year if best results are desired.

TO CLEAN A CHAIN soak it over night in kerosene or gasolene.

TO LUBRICATE A CHAIN (when clean and dry) soak it for 30 minutes in some heavy melted lubricant, such as best quality beef tallow mixed with a little graphite. The lubricant should be heated in a heavy pan nearly to the boiling point to insure its flowing freely, and the shape of the pan should be such as to permit the chain to be wholly submerged. After treating in this manner the chain should be allowed to cool and the lubricant will then set in the bearings.

It is absolutely impossible to properly lubricate a chain by applying oil from a can to the outside surfaces.

THE WHITNEY MFG. CO., Hartford, Conn.

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Are you acquainted with

Willard W. Low ?

Mr. Low is president of the Electric Appliance Company, manufacturers of high grade electrical supplies.
Time was when automobiling was not a continuous round of unhampered pleasure to him.
State plainly, he enjoyed about the same measure of peace that a timid woman would on the back of a bronco.
He never knew just what was going to happen.
All of which was attributable to tire troubles that were as exasperating as they were continuous.
There is no telling just how long this thing would have gone on had it not been for—
But let Mr. Low tell it:

"I desire to advise you that automobiling is now a great pleasure to me. Some time ago it got to a point where I was afraid to take out my car on account of tire troubles. I could not take a drive of any account without having them. At last, one fortunate day a friend of mine recommended your tires, and I had my car fully equipped with them. From that time up to the present my tire trouble has been practically nothing.
I desire to congratulate you on the qua ity of auto tires you are turning out."

Pretty strong proof of the superior quality of our tires, isn't it?

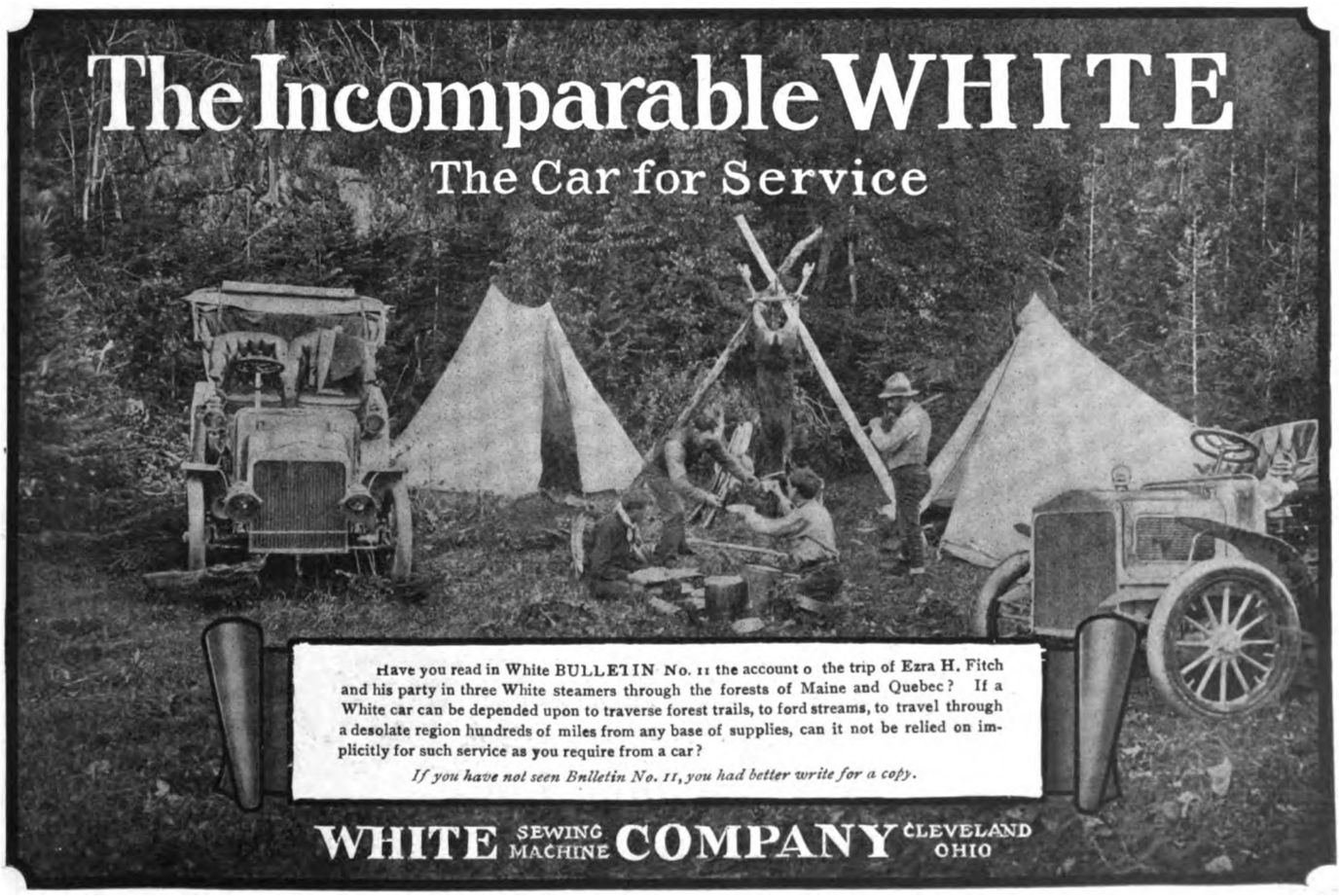
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ARE GOOD TIRES

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The Incomparable WHITE

The Car for Service



Have you read in White BULLETIN No. 11 the account o the trip of Ezra H. Fitch and his party in three White steamers through the forests of Maine and Quebec? If a White car can be depended upon to traverse forest trails, to ford streams, to travel through a desolate region hundreds of miles from any base of supplies, can it not be relied on implicitly for such service as you require from a car?

If you have not seen Bulletin No. 11, you had better write for a copy.

WHITE SEWING MACHINE COMPANY CLEVELAND OHIO

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

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G & J TIRE CO.

Indianapolis, Ind.

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POPE Toledo AUTOMOBILES

1906 Model Pope-Toledo

Type XII, 35-40 H. P. Price, $3,500

MORE POWER SPEED ROOM STRENGTH **LESS** WEIGHT EXPENSE TROUBLE COMPLICATION

The fastest and most powerful touring car in the world. **TYPE XII, POPE-TOLEDO,** marks the greatest forward step yet attained in automobile development. **Motor** has only **10 8-10 pounds of engine weight per H. P.,** and **only 54 pounds of total weight per H. P.,** and this, too, without in any sense sacrificing strength and wearing parts. The **POPE-TOLEDO Carburetor** is developed to such a point of fineness that it is self-adjusting to all conditions of speed, so that with the **Spark** and **Throttle** alone, and always on the high gear, you can drive a **POPE-TOLEDO** anywhere, taking all ordinary hills without rushing them and without shifting gears. **Transmission:** Sliding gear three speeds forward and reverse, and made of the best steel obtainable, thus enabling us to produce not only the LIGHTEST but the STRONGEST and most efficient TRANSMISSION ever placed in any automobile. **Frame:** All steel of few parts, light, flexible and strong. The **POPE-TOLEDO system of brakes** is incomparable, both foot and emergency brakes act on the hubs of rear wheels: very efficient and easily adjusted. **Design:** Entirely new and original. Double side entrance, large and roomy TONNEAU, specially easy of access. Car comfortably seats seven people.

ORDER NOW FOR EARLY DELIVERY. PRICE, $3,500

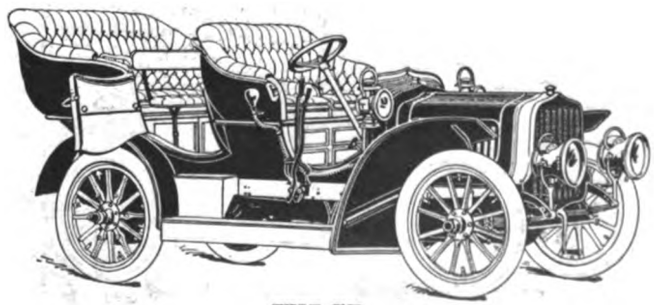
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POPE MOTOR CAR CO.

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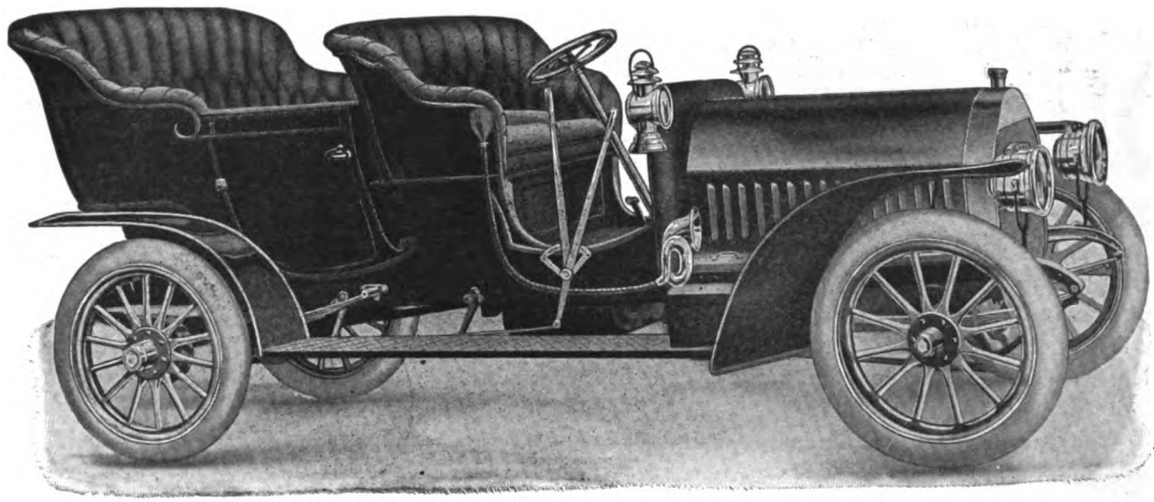
TYPE XII.

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Wayne

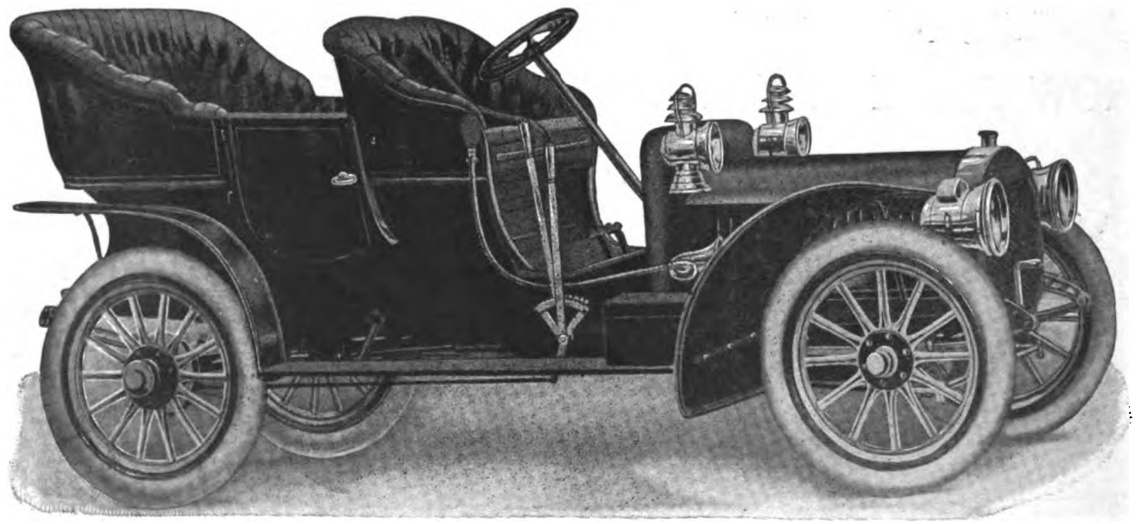
An Introduction to the Wayne Cars of 1906

The appreciation accorded our cars last year warrants us in greatly increasing our capacity and in placing before the automobile trade improved types of Wayne cars. The four models we now present are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high grade machines. In the Wayne cars of 1906 the automobilist will be sure to find a car suited to his needs.



Wayne Model F $3500

MOTOR, 4 cylinder vertical, cylinders 5½ x 5 cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark with quad coil and storage battery. TRANSMISSION, sliding gear with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive floating type. FRONT AXLE, 1 beam drop forged, one piece, nickel steel. WHEEL BASE, 114 inches. TIRES, 34 x 4½. EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, acetylene head lights with generator, tail lamp and tube horn.



Wayne Model K $2500

MOTOR, 4 cylinder vertical, cylinders 4¾ x 5, cast in pairs and water cooled. Engine develops by brake test 35 H. P. Cylinders and pistons ground. IGNITION, same as Model F. TRANSMISSION and axles same type as Model F. TIRES, 32 x 4. EQUIPMENT, same as Model F.

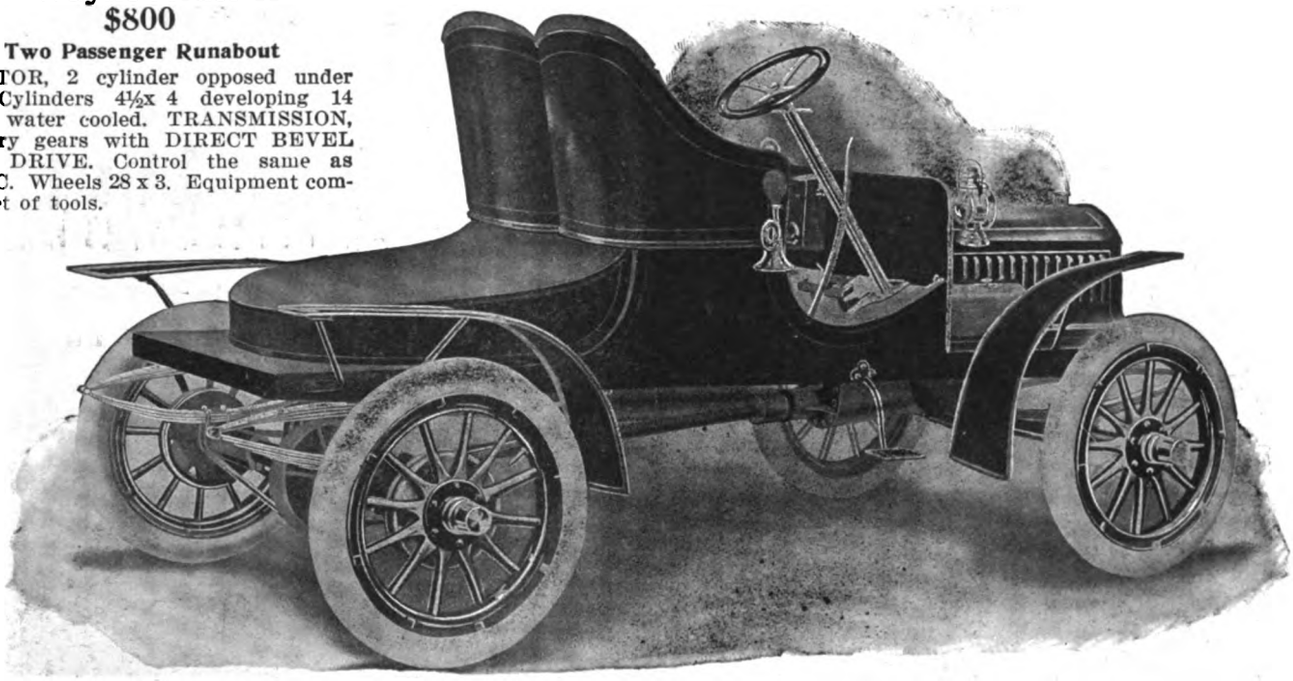
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Wayne

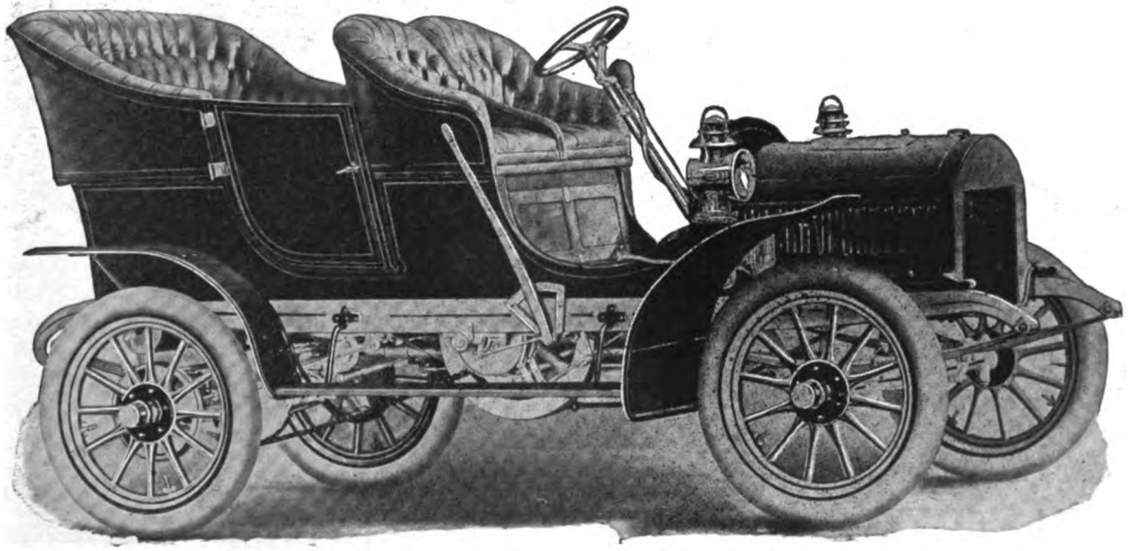
Wayne Model H
$800

Two Passenger Runabout

MOTOR, 2 cylinder opposed under hood. Cylinders 4½x 4 developing 14 H. P., water cooled. TRANSMISSION, planetary gears with DIRECT BEVEL GEAR DRIVE. Control the same as Model C. Wheels 28 x 3. Equipment complete set of tools.



The strong features of this car are the extreme simplicity and acessibility of the engine and transmission. The crank case and transmission case form one casting and the entire engine can be taken apart or assembled in half an hour.



Wayne Model C
$1250

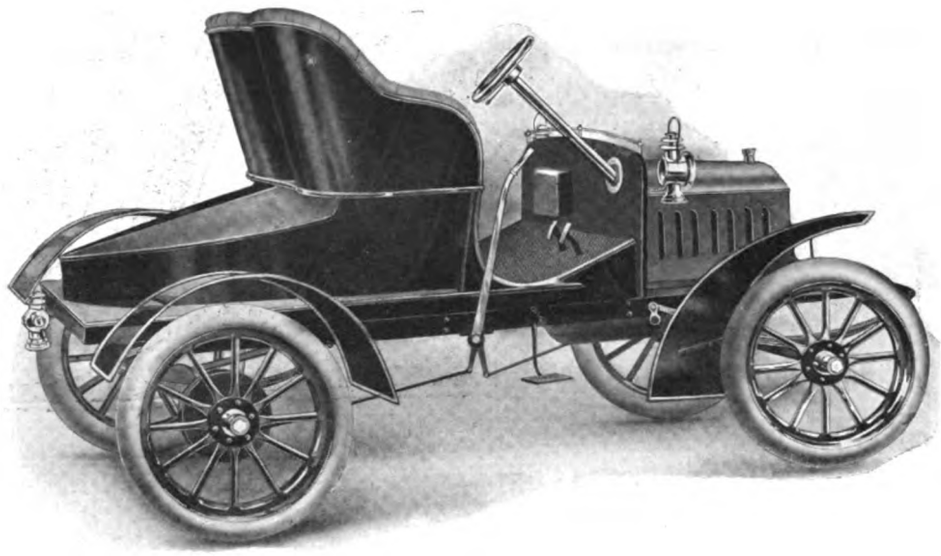
MOTOR, double opposed, of the standard Wayne type, with cylinders 5¼ x 5. Engine is hung under chassis frame and develops by brake test 20 H. P. *This is the same type of car which proved so successful last season, brought up to date and with all new improvements.* TRANSMISSION, is of the planetary gear type with chain drive. CONTROL is by a single lever which engages the high speed clutch and reverse. The slow speed and brake are controlled by foot pedals. TIRES 30 x 3½. EQUIPMENT, complete set of tools, side oil lamps, tail lamp and horn.

We want agents to write us about the Wayne cars for 1906. Agency arrangements can now be made for unoccupied territory. Write while you think about it, for full particulars.

Wayne Automobile Co., Detroit, Mich.

Member American Motor Car Manufacturers' Association, Chicago.

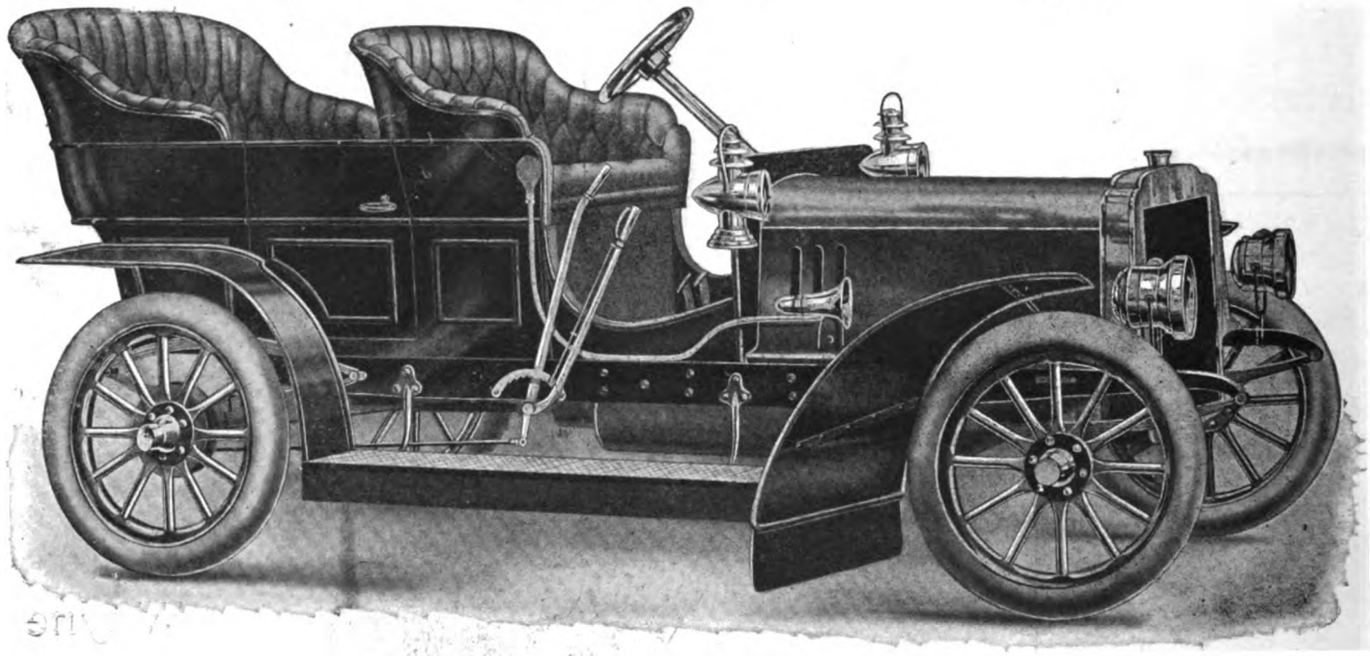
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The Ford 4 Cylinder Runabout

This car—Model N—is the biggest revelation yet made in Automobile construction. A car of this type for less than $500.00 seemed an impossibility, but here it is.

4 Cylinder—15 H. P. Direct Drive. Speed 40 miles. 78-inch Wheel Base. Weight 700 Pounds.



FORD MODEL K.

Six cylinders—40 H.P. 4 to 50 miles per hour on high gear. Perfected magneto ignition. Mechanical oiler. 114 inch wheel base. Luxurious body for 5 passengers. Weight 2,000 pounds. Price, $2,500.00.

No further particulars will be given until these cars are shown for the first time at the Automobile Club of America's show at the 69th Regiment Armory, New York, Jan. 13th to 20th.

DELIVERIES FOR MODELS N AND K WILL NOT BE MADE BEFORE MARCH.

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

FORD MOTOR COMPANY, Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1725 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City.

Canadian Trade supplied by Ford Motor Co. of Canada, Ltd., Walkerville, Ont.

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Diamond

SIDE WIRE SOLID TIRES

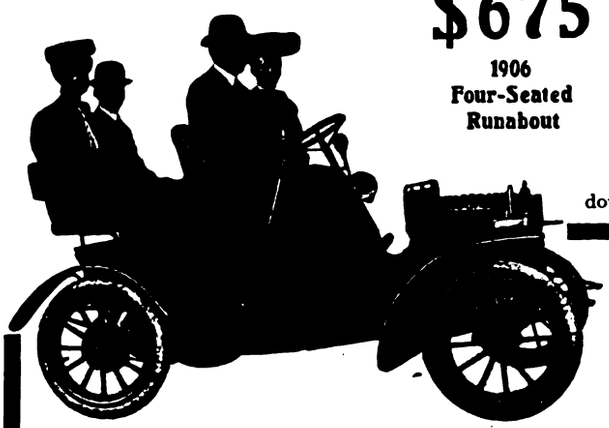
For Trucks and Commercial Vehicles. Conceded to be the Best Motor Truck Tire in the market today.

The Rubber is strictly Our Own Stock. It has never been duplicated and Frequent Attempts at imitations have but emphasized Diamond Superiority.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.
DETROIT—158 Jefferson Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—823 Huron St.
SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.



$675
1906
Four-Seated
Runabout

REO

The extra seat carries two people facing forward, and when not in use is folded down snugly out of the way. 8 h. p., 1000 pounds, 25 miles per hour.

5 Prizes out of 7.

In the New York Motor Club's great six-day economy test

The Reo 8 horse power Runabout (shown above) carried 4 passengers 682 miles for $3.81½ per passenger.

By this feat this car won two medals—**The Gold Medal** for all cars up to $1500 in price; and the **MacMurty Medal** for least ignition trouble, having none at all.

The Reo 'Bus with exactly the same horse-power as the Touring Car referred to below carried ten passengers 682 miles for $2.93 per passenger (including ferriage).

And won three prizes:—The **National Trophy** for Economy per passenger; the **W. J. P. Moore Trophy** for Economy per mile, including tire charges, which were only 4 3-10 cents; and the **Morgan Trophy** for the least gasoline per passenger, which cost only $1.60.

Thus 5 prizes out of 7 went to the splendid REO capacity and power.

WRITE FOR REO BOOK THAT TELLS WHY.

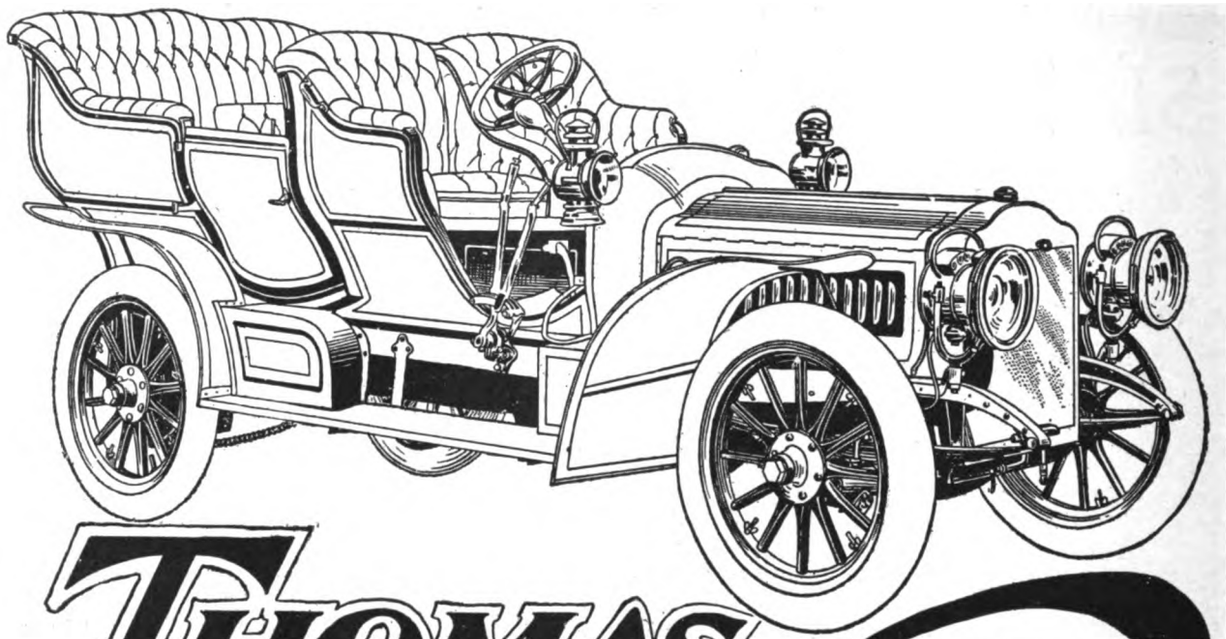
REO 1906 TOURING CAR, 16 h.p., 1,600 pounds, 90 inch wheel base, 5 passengers, side-door detachable tonneau, speed 35 miles per hour, $1250.

REO Motor Car Co., Sales Department, Lansing, Mich.
R. E. OLDS, Pres. R. M. OWEN, Sales Manager.

Agencies throughout the United States.

Digitized by Google

"Every Stock Car Guaranteed to Show Sixty Miles an Hour Before Leaving the Shops."—E. R. THOMAS.



THOMAS

AN AFFIDAVIT THAT SPEAKS VOLUMES:

Can any praise of ours compare with the eloquent testimony concerning the 1906 Thomas contained in this remarkable affidavit?

BUFFALO, N. Y., Nov. 10, 1905.

This is to certify, that we, the undersigned, this day rode at the rate of 60 miles per hour with five passengers over average roads, maintaining a speed continuously in regular stock model 1906 Thomas touring car, and went up a 14 per cent. grade with five people on the high speed and on very bad roads, increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation, and the clutch is extraordinarily sweet and effective.

This is the only American built stock car that within our knowledge has made 60 miles per hour on ordinary roads, even without passengers.

(Signed) AUBREY H. MARTIN, Philadelphia, Pa.
C. A. COEY, Chicago, Ill.
F. W. DART, Hartford, Conn.
C. S. HENSHAW, Boston, Mass.
F. B. HARPER, Beverly, Mass.
A. M. SPEER, Jr., Portland, Me.
A. S. ROBINSON, New York.
RAYNER GOODWIN, Brooklyn, N. Y.

STATE OF NEW YORK, } ss.
COUNTY OF ERIE. }

Sworn and subcribed to before me this 10th day of November. 1905. ARCHIE I. DRAKE, Notary Public.

THE E. R. THOMAS COMPANY,

1416 Niagara Street, - - - - - BUFFALO, N. Y.

Members Association of Licensed Automobile Manufacturers.

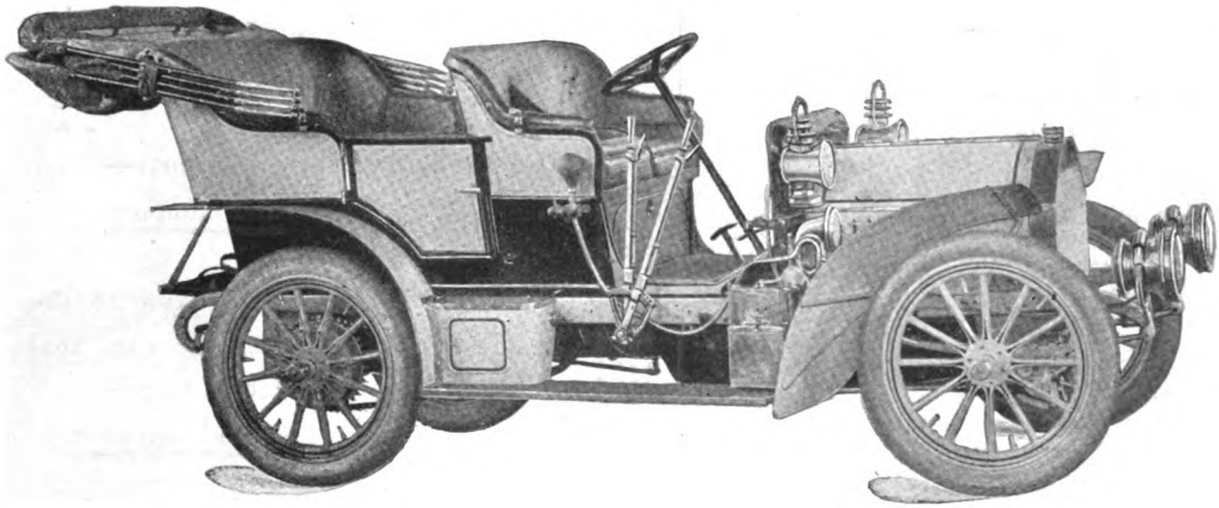
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. 30-35 H. P., $5,000,

Both with complete touring equipment.



TYPE E. 15-20 H. P. $3000.

Top and Luggage Carrier extra.

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; extra wide doors; fitted with top irons; color and striping optional.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.
CONTROL, spark and gas levers on steering wheel.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5 to 7; fitted with top irons; extra wide doors; color and striping optional.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.
CONTROL, spark and gas levers on steering wheel.

The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 240 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

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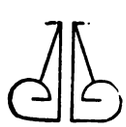
An Investigation of GOODRICH TIRES

Mr. E. Shirts, cashier of the Citizens National Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new. His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with Goodrich Tires 3 in. x 30 in. I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and I found them in perfect condition, not even rim-rusted.

I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.



Rims branded in the channel with this copyright mark have been ispected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company

Akron, Ohio.

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 892 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 906 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 416 Erie St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.

A MILD COMPARISON

A comparison of the record made by the "HAYNES" car in the elimination race for the Vanderbilt cup, with that of far more powerful cars that were allowed to enter the race is

—most interesting

Get a record of the two events—

—and compare

Put the "HAYNES" record in the trials beside that of some of the cars that were allowed to enter the real race—

—and compare.

Study what the "HAYNES" did, and what some of the others DIDN'T DO—

—and compare.

A few LIVE Agents wanted in a few localities. WRITE QUICK for particulars.

We are booking orders for exact duplicates of our Vanderbilt entry in the order of their receipt.

The Haynes Automobile Co.,

Kokomo, Indiana

New York Chicago

Members A. L. A. M.

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QUEEN AUTOMOBILES FOR 1906

3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P.

Price, $2,000.

SPECIFICATIONS

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

C. H. BLOMSTROM MOTOR CO.,

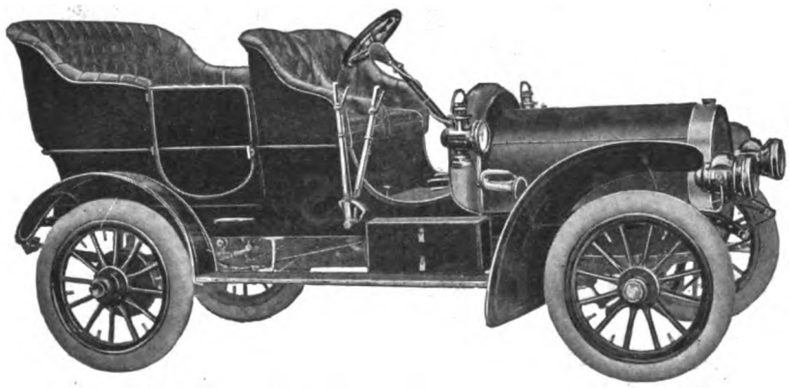
DETROIT, MICH.

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National

Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16 17, made **1,094 3-16 Miles in 24 Hours,** breaking the former World's Record by 78 9-16 miles, and **1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second.** breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the **Unfailing Reliability of Nationals.**



MODEL D—NATIONAL—One of the same kind fully equipped.

"Watch for the Round Radiator"

Write us for anything else you may want to know.

National Motor Vehicle Company,
1000 E. 22d St.
INDIANAPOLIS, IND.

Member American Motor Car Manufacturers' Association, Chicago.

DISTRIBUTORS

Ralph Temple Auto Co.....310 Mich. Ave., Chicago, Ill.
Linscott Motor Co.....163 Columbus Ave., Boston, Mass.
Homan & Schulz Co.....38th St. & Broadway, New York, N. Y.
Tioga Auto Co.....Broad and Tioga Sts., Philadelphia, Pa.
Liberty Auto Co.....138 Beatty St., Pittsburg, Pa.
National Motor Car Agency...705 S. Main St., Los Angeles, Cal.

The Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1450

8 H. P. Tourabout
$780

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in principal cities.

New York Agents: MAXWELL-BRISCOE, INC.

Foreign Representatives (except Canada and Mexico), RICHARD IRVIN & CO., 35 Broad St., New York City.

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DID ANYONE EVER HEAR

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

ROYAL

We have a full description of 1906 model ready to mail to you, if you will send us your address. Will also mail booklet explaining performance of 1906 model in Vanderbilt Trial Race.

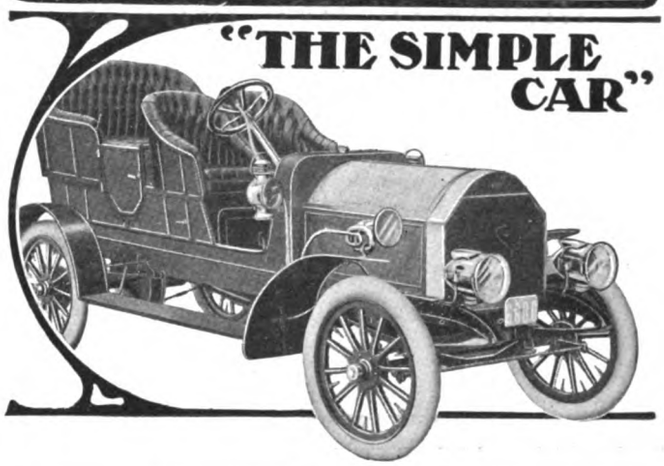
THE ROYAL MOTOR CAR CO., Cleveland, Ohio.
Member A. L. A. M.

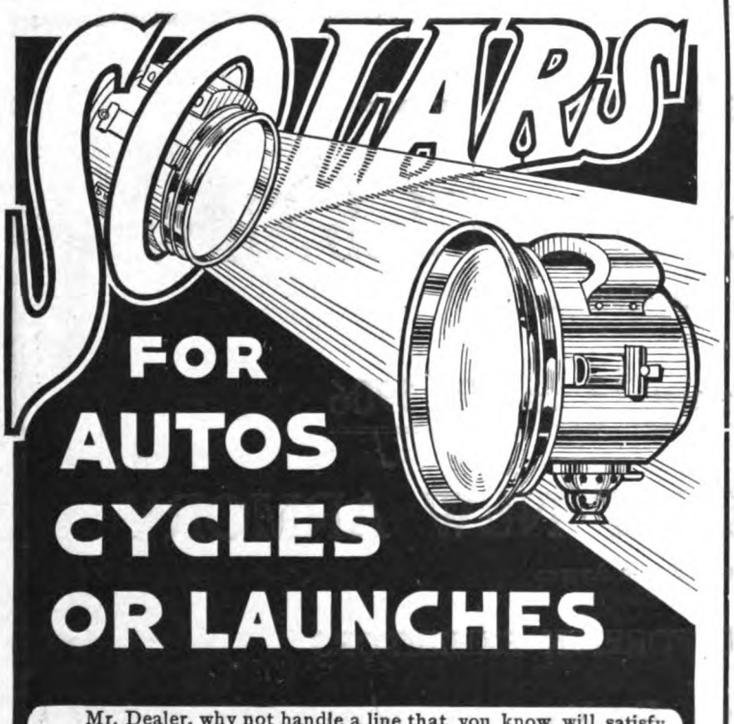
AGENTS: C. A. DUERR & CO., New York, N.Y.; G. J. DUNHAM, Boston, Mass. THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN Minneapolis, Minn.; AUTOMOBILE SUPPLY CO., Lim., Toronto: MOTOR SHOP, Philadelphia, Pa.; WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS PIERCE & CO., Syracuse, N. Y.; THOMPSON CHOEFFEL CO., Rochester, N. Y

GAS-AU-LEC

Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD
both as to construction and control and the easiest to operate and maintain.
"Marks a New Era in Automobile Construction."
40-45 Horse-Power $5,000.
CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.





Mr. Dealer, why not handle a line that you know will satisfy your customers instead of taking chances on "Just as good" lamps. Your profit in as much or more on Solars and your customers "stick."
Write us to-day for prices on our 1906 line.
BADGER BRASS MFG. CO., Kenosha, Wis.
NEW YORK OFFICE: 11 Warren Street

The Expected Revolution Has Come!

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found he only good reason why you should ***not*** buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the ***two*** cycle two cylinder Elmore engine.

Understand—the ***two*** cycle two cylinder Elmore engine produces ***two impulses every time the fly-wheel turns.***

As you know, the two cylinder ***four*** cycle furnishes only ***one*** impulse every ***fourth*** time the fly-wheel turns.

In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time n finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached ts climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 1104 Amanda St. Clyde, O.

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The manufacturer who equips his cars with Veeder odometers reaps a crop of mileage enthusiasts, who, in the face of the odometer readings, will make no unreasonable demands for replacements or free repairs.

THE VEEDER MFG. CO., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

"THE OPEN SHOW THAT MUST BE SEEN"

Sixth Annual Automobile Club Show

of the Automobile Club of America

New York City, January 13 to 20, 1906

SIXTY-NINTH REGIMENT NEW ARMORY

Twenty-sixth Street near Fourth Avenue

LEADING AMERICAN AND FOREIGN EXHIBITORS

Gasoline Steam Electricity

The Up-to-date Exposition of a Great Industry.

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Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What tire shall I get *next* time?"

For a rim-cut tire is pretty near its finish.



Fig. 1

And the chances are ten to one that if you are forced to ride around the block on a deflated ordinary tire with ordinary rims your tire will be rim cut before you get there. Because ordinary rims are just like a dull jack-knife. Now if you wished to cut a strap with that dull knife, and the strap was held like Fig. 1 you couldn't do it, because your strength would not be great enough.



Fig. 2



Fig. 3



Fig. 4

But if you take the strap like Fig. 2, with a little sawing you can cut it. That's exactly the way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim to cut the tire. But just as soon as it gets partly deflated or flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.



Fig. 5

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.

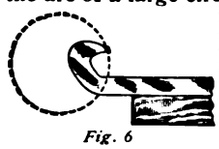


Fig. 6

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.



Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims *absolutely flat* for **25 miles** on rough roads without serious injury to the tire. We have the evidence if you would like to see it.

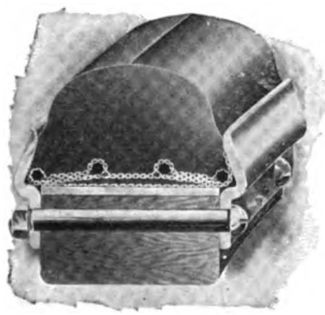
This is only one reason why wise riders are specifying Gooodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manufacturers, Dealers and Riders seeking relief from tire troubles.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove Street, Akron, Ohio.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 696 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

TURNER SOLID TIRE

ENDLESS)



THE CORRECT TIRE

FOR

Delivery Wagons,
Heavy Trucks,
Broughams,
Hansoms, Surreys,
Victorias,
Hotel 'Busses,
Hose Wagons,
Ladder Trucks,
Chemical Engines,
Water Towers,
Fire Engines.

TIRE ECONOMY

COST OF MAINTENANCE is main factor for consideration in selecting tire equipment.

MAKE CAREFUL COMPARISONS.
Don't be prejudiced by poor results obtained from cheap tires.

STOP EXPERIMENTING and end dissatisfaction by adopting a tire that has demonstrated its worth by years of use under all conditions, and to thousands of satisfied users

PROVEN LOW COST OF MAINTENANCE.

THE HARTFORD RUBBER WORKS CO.

HARTFORD, CONN.

Branch Houses:—NEW YORK, BOSTON, PHILADELPHIA, BUFFALO, CLEVELAND, DETROIT, CHICAGO, DENVER, SAN FRANCISCO, LOS ANGELES.

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The Largest Automobile Supply House In America.

MILLER'S

M

ANTI-FREEZE COMPOUND.

DIRECTIONS FOR USING.

The radiator should be thoroughly washed out with hot solution of caustic soda, which will remove any dirt, and then clean water should be put in to see if the radiator leaks any place.

If the radiator is found not to leak, put in the solution. To get a mixture that will not freeze at 15 degrees below zero Fahrenheit, add ten pounds of the compound to two gallons of water. To get a solution that will not freeze 30 degrees below zero Fahrenheit, add ten pounds of the compound to every six quarts of water.

The cover on the can should be kept closed tight at all times while it contains any of the compound.

CHAS. E. MILLER,

Manufacturer, Jobber, Exporter, and Importer.

Home Office, 97-99-101 Reade Street, New York.

BRANCHES:— Broadway and 38th Street, New York. | 318 & 320 No. Broad Street, Philadelphia, Pa. | 202 & 204 Columbus Avenue, Boston, Mass. | 406 Erie Street, Cleveland, O.

MICHELIN

Used on 90% of the high-grade American and European cars.

WHY? MORE PURE RUBBER, THEREFORE MORE RESILIENT, THEREFORE LESS WEAR AND TEAR ON THE ENGINE

AND

CARRY MORE GUARANTEED WEIGHT PER WHEEL

THAN ANY OTHER PNEUMATIC TIRE MANUFACTURED.

THINK IT OVER.

MICHELIN TIRE AMERICAN AGENCY, Inc.,

E. D. WINANS, Gen'l Mgr.

Telephones—{760 / 761} Madison Square, New York.

6 West 29th Street, New York.

BRANCHES IN ALL LARGE CITIES.

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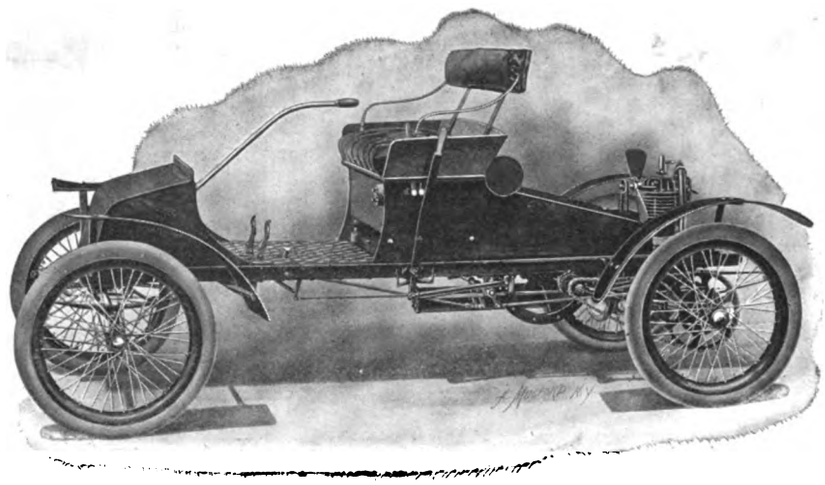
1906 Orient

FRICTION-DRIVE

BUCKBOARD

MODEL B. B.

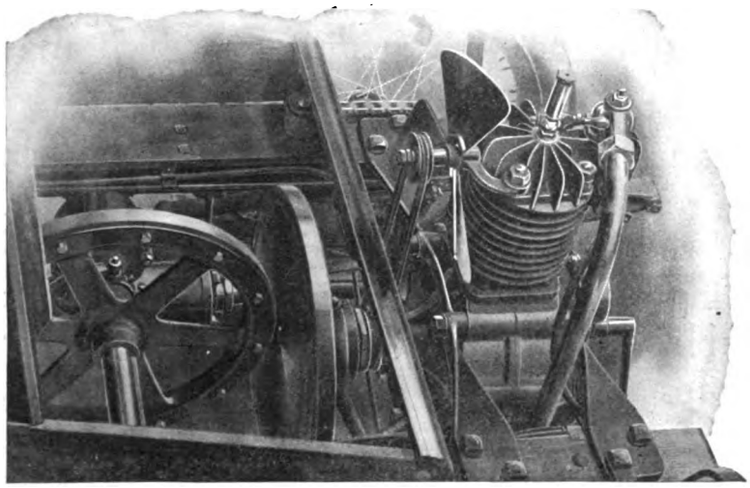
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Four H. P.
10-Inch Clearance
Speed, 30 Miles an Hour
Climbs 40 Per Cent. Grade
Weight, 600 Lbs.



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Numberless Speeds Forward And Reverse
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A REMARKABLE MOTOR CAR FOR $400.

As noiseless and free from Vibration as a 4-Cylinder Touring Car; will climb grades and drive through sand and mud that no other motor car of any horse power can negotiate. Its maximum driving ratio is 40 to 1—a high powered touring car is but 18 to 1.

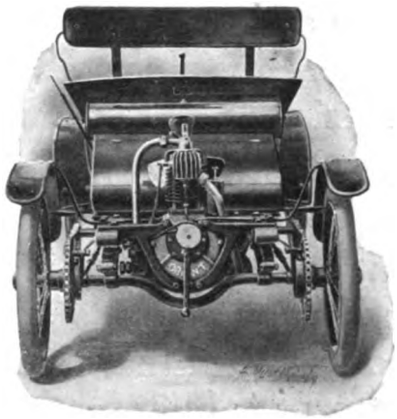


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GASOLINE CONSUMPTION, 30 miles to one Gallon

OIL CONSUMPTION, 90 miles to one Pint

OPERATING COST Half a cent per mile



RESPONSIBLE DEALERS DESIRED IN UNASSIGNED TERRITORY

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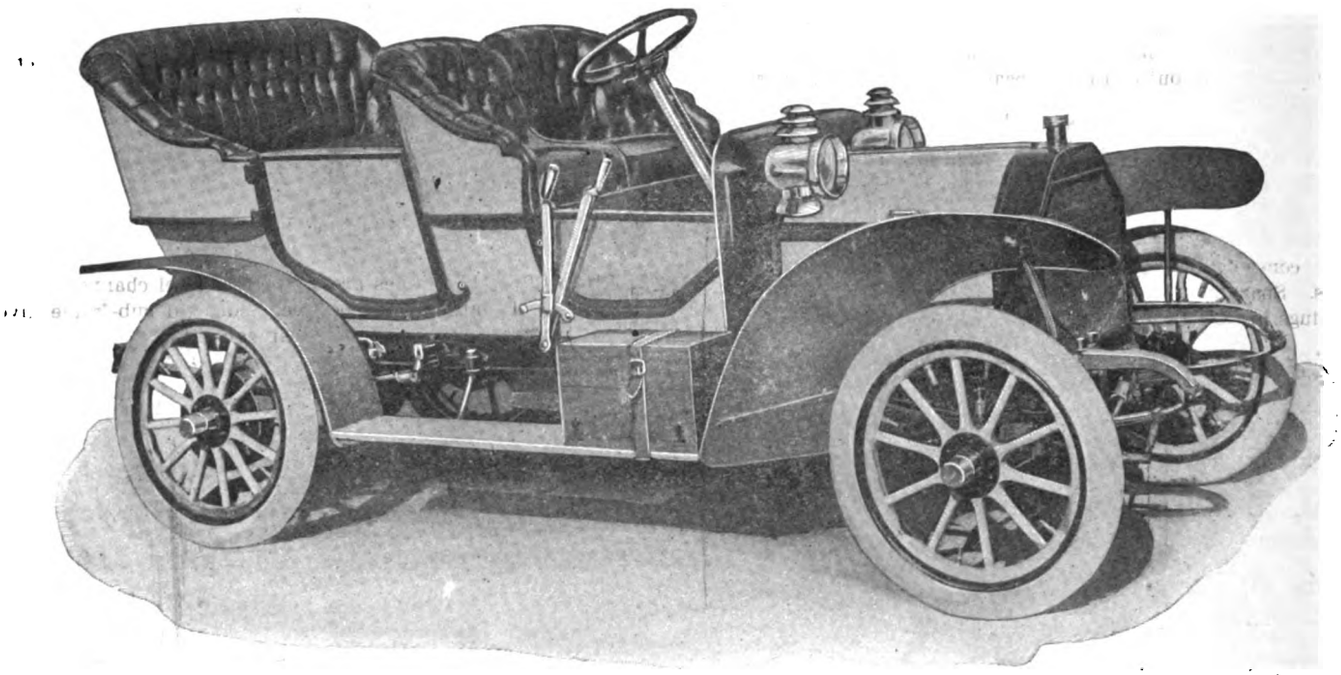
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General Office and Factory, WALTHAM MASS., U. S. A.

Members Association of Licensed Automobile Manufacturers.

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OLDSMOBILE



Two-cylinder, Two-stroke Cycle Light Touring Car.

MODEL "L" Price $1250.

We have already announced in a general way our two-cylinder, two-stroke cycle car. Following we give a detailed description of this most attractive car—the smart appearance and "get up and get" qualities of which make it irresistible, once tried.

Model "L" has a marked individuality, though it approaches in general appearance the lines of several foreign machines very popular in America. The front axle is brought well forward and the rear wheels back, giving a very long wheel base and adding to the easy riding qualities of the car. The tonneau is so constructed that it is easily removable, and the "beetle back" luggage compartment is built for utility as well as for appearance. When thus equipped it becomes the most attractive of two-passenger or runabout outfits. The standard color will be pearl gray with black trimmings and red running gear.

MOTOR. The motor is two-cylinder, two-stroke cycle, vertical water cooled, placed under bonnet at front; cylinders 5-inch bore, 5-inch stroke, rating 20 to 24 actual horsepower, giving ample road efficiency. The cranks set at 180 degrees are counterweighted, reducing vibration to the minimum. Lubrication is by the Hill Precision oiler, bolted to brackets upon cylinders, and driven by eccentric. Pistons lubricated on both sides. Crank pins are oiled through middle main bearings. This system absolutely prevents smoky exhaust.

The cylinders and pistons are of best gray iron, made in our

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OLDSMOBILE

own foundry. The crank case is of aluminum, the lower half being removable without disturbing bearings. The crank shaft is drop-forged and subjected to a special heat treatment, and finished all over and perfectly balanced. The brakes are of generous proportions and consist of bronze one-half shells with babbitt lining. Thus any bearing may be replaced from stock without trouble or rebabbitting.

Cooling is by water circulated by gear pump. Radiator of flat tube construction. Ignition, one storage cell, one set of six dry cells. Spark coil on dash. Commutator beveled gear driven. Spark plugs are set at an angle to prevent fouling with oil.

TRANSMISSION. The transmission is sliding gear, three speeds forward and one reverse. The gears are of special high carbon stock tempered and hardened. The control is of the selective type operated by a single lever, which cannot be thrown into reverse until prawl has been lifted, a precaution against accidental jamming of gears. The clutch cone sets into fly wheel, all strains self-contained. The clutch is thrown out by foot lever and also by emergency brake lever. The transmission case is of aluminum, the lower half being removable at top. Transmission is splash-lubricated from case through pockets packed with waste and screens. This precaution is taken to prevent steel chips getting in bearings. The transmission drive is through 1¼ inch shaft and Spicer dust-proof universal joints to the rear axle.

AXLES. The front axles are of our own special design, 2-inch tubing, ¼ inch wall. Steering connections have especially large bearings, all of which are equipped with "T" handled dope cups and protected by leather dust caps. The steering cross connection and steering link are adjustable, and the wheels may thus be lined up at any time. The axle is dropped in centre to protect fly wheel and other parts beneath car. The rear axle is equipped with Timken roller bearings throughout and with brakes, etc., of our own special design.

BEVEL GEAR DRIVE. The car has bevel gear drive, the ratio of the gear being 3 to 1 for standard equipment.

BRAKES. The brakes are of the internal expanding type, with toggle set-up, either camel's hair or metal lining being used, depending upon the section of the country to which car is shipped. The brake drum is of pressed steel, 12 inches in diameter, 2 inch face. The brake on the cardon shaft at rear of transmission is operated by foot pedal, while the emergency brake upon the rear wheels is operated by hand lever. The application of emergency brake throws out clutch, disconnecting transmission from motor.

SPRINGS. The springs are made of the very best obtainable stock, and are of the half elliptic type. The front springs are 36 inches by 2 inches and the rear 48 inches by 2 inches. The long spring hangers at front and rear permit lengthened wheel base.

FRAMES. The frames are of pressed steel channel section. A sheet steel plate riveted between side and sub-frame gives pronounced bracing effect. The dust pan attached to sub-member and extending from front cross member to the rear of transmission is removable. This dust pan makes inside of car absolutely dust, mud and water proof. Both the engine and transmission are aligned upon sub-frame and all working parts may be removed without disturbing hanging of crank and transmission cases.

CARBURATION. The carburetor is built for us after our own design, and is very effective and economical of fuel. The gasoline tank has 15 gallons capacity.

CONTROL. The steering is accomplished through a worm and nut mechanism. The nut is long and has a wearing surface babbitted so that same may be replaced at any time. The steering gear case is securely bolted between sub-frame and side member. The spark and throttle levers are placed upon steering post just beneath and at the right of 16-inch oval rimmed steering wheel.

MISCELLANEOUS POINTS. Wheel base 102 inches, the tread standard 55 inches; though 52 inches and 58 inches are furnished on special order. Wheels 30 inches, 10 spokes front, 12 spokes rear. Tires, 30x3½. The muffler is arranged longitudinally beneath the car, and entire construction is so enclosed that very little dust is disturbed by the passing of the car. Running board, mud guard irons, instead of being riveted on, are drawn into taper sockets upon side of frame and are easily removable. The lamp brackets are adjustable for different widths of lamps. We furnish tubular horn, two acetylene lamps, a generator and three oil lamps with this car.

Further specifications sent on reqeust.

OLDS MOTOR WORKS

LANSING, MICH., U. S. A.

Member A. L. A. M.

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Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

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MOTOR TALK COUPON

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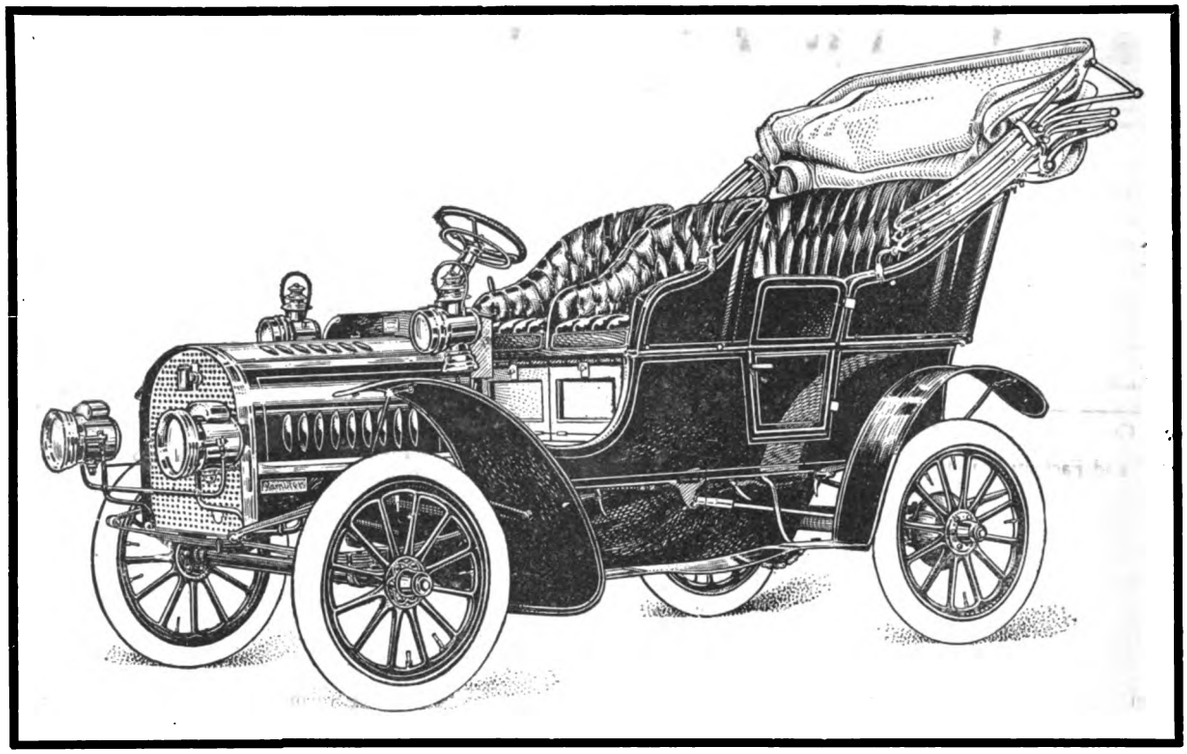
Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year.

K2

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Rambler

The cost of an automobile is not merely the original price of the car, but to this should be added the expense of daily upkeep. This expense is generally in proportion to the constructive complication of the car.

To this is due the acknowledged economy of the Rambler, in which simplicity, both in operation and design, is a paramount feature.

To this end has been devoted constant study and years of experience, resulting in a car of steady dependability that will serve you day after day, without the petty breakdowns that, while severally inexpensive, reach a high aggregate in a season's use.

The verdict of thousands of Rambler owners, or a personal examination at our branches or agencies everywhere, will bear ample evidence that the Rambler is the car of steady service.

Prices—Surrey Type One $1,200, Type Two $1,650, Type Three $1,350. All ready for the road with full equipment of lamps, horns, tools, etc. Our catalogue is at your service.

Thos. B. Jeffery & Co.

Main Office and Factory, - - - - Kenosha, Wis., U. S. A.

Branches:

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Philadelphia, 242 N. Broad Street.
San Francisco, 10th and Market Streets.
Chicago, 302-304 Wabash Ave.
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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, December 7, 1905. No. 11

CHRISTENED THE AEROCAR

Detroit's Newest Company Chooses that Title —Staff Selected and Factory Being Rushed.

Aerocar Co. will be the style of the big, new company which has been formed in Detroit, and of which the Motor World last week gave the first news. It will be capitalized at $400,000.

The factory, which is already half completed, and which the contracts require to be finished within forty days, is located on Mack avenue, facing the Michigan Central Belt Line. As stated last week, it will be of three stories, 400 by 52 feet, and thoroughly modern in every detail, including two large electric elevators. It will be of solid mill construction, with fire walls dividing the structure into four sections, and further protected by the most approved sprinkling system.

According to his representatives, Alexander Y. Malcolmson, the wealthy and astute coal operator, who is the power and moving spirit in the Aerocar Co., will not resign as treasurer of the Ford Motor Co., as was reported, but will retain his office and interests in that concern, also. W. G. Morley, for so many years the purchasing agent and advertising manager of the Olds Motor Works, who resigned those positions, when the Olds offices were removed from Detroit to Lansing, will be Mr. Malcolmson's right hand man in the Aerocar Co. H. H. Thorpe, formerly with the H. H. Franklin Mfg. Co., will be general sales manager; E. J. O'Hagan, for seven and a half years with the Winton Motor Carriage Co., and later with an air-cooled concern in the East, will be superintendent. C. Pfahler will be the chief draughtsman. He is a graduate of the Technical University, of Berlin, Germany, and has had three years' experience in an American automobile factory.

The Aerocar will employ the Reeves air-cooled four cylinder engines, made by the gilt-edged Reeves Pulley Co., of Columbus, Ohio. The cylinders are arranged tandem and are cooled by a fan in front.

The initial output of the Aerocar factory will be 500 touring cars, although it is hoped to double this number.

Will Make a Pleasure Car, Too.

According to present plans, the Knox Motor Truck Co., Springfield, Mass., will shortly engage in the manufacture of pleasure cars, also. They have "taken on" the Sunset 10-horsepower two-cycle car, described in the Motor World of November 16. The car is now produced on a small scale by the Sunset Automobile Co., of San Francisco, a representative of which was recently in this part of the country seeking an Eastern connection. On the Coast, the car which incorporates a number of innovations has a big reputation as a hill climber, and sweet running vehicle.

Toppling of the Monarch.

Following the filing of a petition by creditars charging bankruptcy, J. O. Mason has been appointed receiver for the Monarch Automobile Co., Aurora, Ill. The liabilities of the company may reach $75,000, while the assets, it is claimed, are worth scarcely $20,000. The creditors allege that since November 29 the assets of the concern have been in the Sheriff's hands. Although the Monarch Co. carried full page advertisements in some of the automobile papers, that is the chief figure it cut in the industry.

Wayne Gets into Germany.

The Wayne Automobile Co., of Detroit, Mich., which apparently has become possessed of seven league boots, so rapid has been its progress in the last few months, is now reaching out for foreign trade. One of its very first European connections has been made in the country in which American connections are usually most difficult—Germany. The Wayne agency for that empire has been placed with Leopold, Robert & Co., of Frankfort-on-Main.

New Building for Rambler Branch.

The newly established Rambler branch in San Francisco is doing uncommonly well—so well, indeed, that contracts have been let for the construction of a building designed for its occupancy. The new place will be located at the corner of Jones street and Golden Gate avenue, with a frontage of 48 feet on the former and 38 feet on the latter thoroughfare. It will be of two stories, with a depth of 128 feet, and it due to be completed on February 1.

N. A. A. M. AGAIN IN SESSION

But There were not Many Transactions of Interest—Date Set for Annual Meeting.

Although a very full meeting—but two members were absent—there was little of interest transacted by the executive committee of the National Association of Automobile Manufacturers at their session in New York yesterday.

Passing on the applications for sanctions for a number of local shows and fixing the date of the annual meeting appears to have been the nearest approach to departure from dull routine. The annual meeting, at which, of course, officers will be elected, was set for Wednesday, January 16. It naturally will be held in New York, but not, as usual, at the association offices. Instead it will occur at some hotel—yet to be selected—convenient to the show buildings. There is said to be a possibility of two tickets being presented.

At yesterday's meeting a communication was read from the American Automobile Association suggesting a conference regarding next year's endurance or reliability contest, presumably the trial for the Glidden Trophy. After being read the communication was filed for future reference.

It is said that the local show situation in Cleveland was mildly referred to. In that city it appears that the Rambler agent who was barred from the last show planned a coup after it was over, and carried it out by obtaining an option on the only available building and on the most available dates in 1906. Recently when the givers of the option awakened to the situation they disregarded the previous transaction and leased the building to the dealers' association, which holds the sanction for the show. The association has offered membership to the Rambler man, but on terms that are not acceptable, and he is said to contemplate making things interesting, whatever that may mean.

Northern Names Its Prices.

For 1906 the Northern line will comprise four models, as follows: Thirty-horsepower touring car, $3,000; 20-horsepower limousine, $2,500; 20-horsepower touring car, $1,800, and the time-tried runabout, $650. These prices include lamp equipment in each case.

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In the Retail World.

R. D. & C. O. Britton, the Allyn street carriage dealers in Hartford, Conn., are "going into" automobiles. They have taken on the Maxwell.

Schwender, Day & Co. have leased the buildings at Nos. 110 and 112 Main street, Mankato, Minn., and opened a garage. The firm will also conduct an automobile livery.

Harry M. Austin has bought the four story stable at the northeast corner of Sixty-third street and Park avenue, New York, and will convert it into a garage. It measures 50½x 100 feet.

Manley Bros., Harvard, Ill., have added automobiles to their business, and will devote most of their attention to the new department. They will handle the Mitchell cars exclusively.

A two story addition is being made to the Mitchell Automobile Co., salesrooms at No. 1,445 Michigan avenue, Chicago, Ill., which is to be completed this month. It will be used for a repair shop.

Dunlop & Easton, Los Angeles, Cal., will establish a branch garage at Hollywood, Cal. A lot has been purchased on the south side of Sunset Boulevard, near Cahuenga avenue, and a building will be erected at once.

Believing that the automobile is a better paying proposition than football, Harold Elmels, one of Purdue University's star players, will not return to that Indiana institute in the spring. Instead he will open a garage at Davenport, Iowa.

The American Automobile Storage Co., New York City, has taken the agency in New York and vicinity for the Premier air cooled car. Its territory includes Long Island, New Jersey, Connecticut as far as New Haven, and New York State as far as Poughkeepsie.

Joseph Troxhall, who was formerly with the old De Dietrich company, has become secretary and manager of the New Amsterdam Motor Co., No. 152 West Fifty-second street, New York City. The company has taken the agency for the Crawford car.

N. C. Mansir and C. R. Dunbar, who conducted the Holyoke Automobile & Repair Station on Division street, Holyoke, Mass., have sold out to Otto Nessman, the local agent for the Stevens-Duryea cars, and A. L. Witherell. The new proprietors took possession last week.

The Reliable Automobile Co., of Tacoma Wash., has opened a garage, livery and repair shop at Nos. 111, 113 and 115 Eouth Eighth street. W. O. Williams is its manager and G. O. Smith secretary and treasurer. The company has taken on the Packard, Cadillac and Winton lines.

Fire, which originated in the vulcanizing room of Isaac Kelzer's automobile repair shop and supply store, at No. 438 Ninth street, Washington, D. C., last Friday, 1st inst., caused damage to the extent of $10.000. Kelzer's loss was comparatively small, however—$3,500, the major part of which was covered by insurance.

The Youngstown Automobile & Repair Co. has started business in Youngstown, Ohio, with Charles T. Gaither, formerly with the Mahoning Motor Car Co., in charge. For the present the company has established itself in the Long Building, in Centre Square, but a new garage will be completed by February 1. The Reo car will be its leader.

F. L. Caulkins, of the Caulkins & Post Co., Middletown, Conn., has taken C. H. Brewster, of Springfield, Mass., into partnership in his automobile department, and will erect on Main street what is intended will be one of the largest and most completely equipped garages in the State. It will be of brick construction, three stories high, and will have a frontage of 42 feet with 150 feet depth.

50 Per Cent. for DeDietrich Creditors.

Meetings of creditors of the De Dietrich, American Branch, and of Frederick De Turckheim, head of that concern, were held on Tuesday before Stanley W. Dexter, referee in bankruptcy, at 71 Broadway, New York, at which the receiver, Lindsay Russell, reported that the affairs of both were so very much involved that he had found it impossible to distinguish the claims, so he prepared schedules which cover both.

They show liabilities of $140,974 and assets of $46,294, consisting of $37,306, proceeds of sale of automobiles; one automobile, $2,671, and outstanding accounts, $6,317. Baron Adrian de Turckheim, of Luneville, France, is the largest creditor, $131,462. Frederick de Turckheim, it was stated, owned all the stock of the De Dietrich, American Branch. He was not present at the meeting, and it was said he is in Paris. Technical objections were made to eight claims which were filed yesterday, and the election of a trustee was deferred.

Creditors were informed that a composition would probably be offered soon at 50 cents on the dollar.

Why Hartford Sailed for Paris.

E. V. Hartford, president of the Hartford Suspension Co., sailed for Paris on Wednesday of last week. He did not go wholly to view the French show—in fact, his mission was rather an unusual one. Although the Truffault-Hartford suspension or shock absorber is of foreign origin, Mr. Hartford has improved it to such an extent that his visit has to do with selling the original makers the license to use his several improvements.

The new Hartford suspension is now fitted with a self-adjusting device, which requires no tightening up as in the past. There is a five-prong spring washer, that takes up all of the inside wear, and the whole is held in place by a split nut of Mr. Hartford's own design. The sample which A. G. Hoffman, treasurer of the company, is now showing to the trade, has one double and one single arm, instead of two single arms. This makes it impossible for the arms to shear off, and, being self-adjusting, the device needs no attention after being placed on the car.

Another car from the land of garlic and spaghetti will make its debut in America. E. Paladini, New York City, has taken the agency in this country for the Zust.

The Week's Incorporations.

New York City, N. Y.—Metropolitan Auto Co., under New York laws, with $25,000 capital. Corporators—S. F. Randolph, H. H. Colbath and G. S. Kebibian.

Atlantic City, N. J.—The New Jersey Touring Co., under New Jersey laws, with $30,000 capital. Corporators—Daniel W. Hughes, William P. Bushell and Lowder T. Layton.

St. Louis, Mo.—Bagnell Automobile Co., under Missouri laws, with $10,000 capital, fully paid up. Corporators—Henry B. Graham, William F. Bagnell and James E. Morse.

New York City, N. Y.—C. A. Mezger, Inc., under New York laws, with $5,000 capital; to make spark plugs and motors. Corporators—Minnie Mezger, R. M. Owen and Zoe Owen.

St. Louis, Mo.—Colonial Automobile Co., under Missouri laws, with $15,000 capital, fully paid. Corporators—Frank B. Smiley, Charles E. Lane, Samuel J. Keffer, Henry C. Seabold and Lora E. Lane.

Salt Lake City, Utah—Gray Automobile Company, under Utah laws, with $5,000 capital; to deal in automobiles. Corporators and officers—William H. Gray, president; Sidney M. Bamberger, vice president; Joshua M. Bean, secretary-treasurer.

Three Seek to Forclose Mortgages.

William L. Wilde and wife, of Stamford, Conn., have asked the Superior Court to foreclose a mortgage for $6,000 upon property held by the old International Power Vehicle Co., of that city. It is claimed that the mortgaged property was conveyed to the defendant concern by W. P. Hatch. It is also understood that the Eastern Trust Co. and the Empire Trust Co., both of New York City, have each a mortgage of $250,000 upon property of the International company, the mortgage having been given after that of Mr. and Mrs. Wilde. The trust companies also ask for a foreclosure.

Four Acre Factory for Wayne.

The Wayne Autotmobile Co., of Detroit, Mich., is making ready to spread itself. It has acquired four acres of ground on Piquette avenue, between John and Brush streets, that city, on which they will erect a substantial factory building, the foundation for which was started last week.

Leaves Carriages for Cars.

Louis E. Burr has been elected president and general manager of the Woods Motor Vehicle Co., of Chicago, succeeding to the vacancy made by the death of the former president. Mr. Burr was for twenty years connected with C. P. Kimball & Co., the Chicago big carriage firm.

Bliss and Moon Join Independents.

The American Motor Car Manufacturers' Association has made two notable accessions to its membership—the E. W. Bliss Co., the big Brooklyn machinery house which has had a car under way for a year or more, and the Moon Motor Car Co., of St. Louis, an offshoot of the buggy company of that name.

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JUST WHAT F. O. B. IMPLIES

Responsibilities That Shipping Condition Entails of Which Many Merchants Seem Unaware.

"One of the vexatious features in every-day commercial life is the wrangle shipper and consignee have about overcharge in freight expenses or damage and loss to goods," says Eugene V. Sharp, the author of "Sharp's Standard Rules of Shipping." "A shipper will sell a bill of goods to a country customer, and the customer, when settling, will deduct from the invoice the amount he believes was collected from him in excess of proper freight charges by the railroad. He does not know the exact freight rate, which should have been assessed on his shipment, but he knows that some time ago he received a similar shipment, for which the railroad collected $2.85, while this time he was made to pay $4.10, and he forthwith deducts $1.25 when paying the shipper's invoice, leaving to the latter to collect the overcharge from the railroad as best he can.

"It is not our intention to go into any discussion as to whether a claim for overcharge or damage really existed. We assume it did exist. What, then, should have been the proper course for the consignee to pursue; in other words, was he justified in deducting his claim against a railroad from shipper's invoice, or should the consignee have assumed himself the burden of collecting the claim from the railroad company?

"For the benefit of thousands engaged in business seemingly unable to determine this question correctly, a brief definition of the common law governing this subject will prove helpful.

"If A at Philadelphia sells to B at Cincinnati a bill of goods on terms "delivered f. o. b. (free on board), Philadelphia," the place at which the contract is to be filled is Philadelphia. This means that A tenders his goods to B at Philadelphia for acceptance, and if B of Cincinnati for convenience sake declines to come to Philadelphia and receive his goods, and instead instructs A to send him the shipment by railroad or otherwise, it is B of Cincinnati who thereby assumes all risk involved in shipping.

"If S at Kansas City sells W at Buffalo five carloads of corn delivered "f. o. b. Buffalo," the place for filling the contract is Buffalo. It means that S of Kansas City has to bring the five cars of corn, that is the quantity contained therein, to Buffalo at his own risk and expense, and there tender the goods to the buyer for acceptance. Should any of the cars have a leaky roof, causing damage to the corn by wet or some of the corn was lost in transit through a hole in the floor of a car, or an overcharge in freight expenses exist, it is S. of Kansas City who must assume the risk. If, however, Mr. S. of Kansas City is willing to pay the freight charges, but is unwilling to assume the risk involved in shipping, he can offer and sell his corn to W. at Buffalo, "delivered F. O. B. Kansas City, Mo., freight allowed to Buffalo." In this case the place of filling the contract is Kansas City, and W. of Buffalo will have to come to Kansas City, examine and accept there the corn, or assume himself all risk involved in shipping, should he elect to stay at home and order the corn forwarded to him to Buffalo."

Boston "Insiders" Clean Up $10,000.

The show situation in Boston has been given an unexpected turn. It will be recalled that after a certain few of the dealers and branch managers had made a huge success of the first exhibition and divided a tidy sum, the dealers and managers then on the outside also organized and raised such a howl and exerted such pressure that they were "let in" and a corporation formed, one share of the stock being alloted each member.

The show of last March was also a tremendous success, but after the profits had been divided the employers of at least a number of the branch managers called on the latter to pay over the "easy money," claiming it as theirs because it was their time and money and goods that had been used to earn the profit. They also ordered that the corporation certificates be transferred to them. Some of the managers complied with the best grace possible; others turned over the profits but not the share of stock, and there were those who transferred neither money nor stock. It was this situation that caused so many changes of managers in Boston during recent months.

It was supposed that the last had been heard of the matter, but this week the report comes from Boston that the original certain few "insiders" who had held onto the lease of Mechanics' Institute—the only desirable building—had subleased that structure to the dealers' association at a rental of $10,000, which, of course, they will now apportion among themselves and as these "insiders" will also obtain a share of the show profits, that they have cause for a satisfied "last laugh" is evident.

Detroit's Shrewd Departure in Demonstrations.

Competition is getting keener every day, and methods of salesmanship that landed orders a few years ago have long since been shelved. There are so many salesmen "after" each prospective customer that the latter no longer has to bother himself to visit a salesroom of his own accord. He must be hunted and carried there. Detroit dealers are said to be among the first to realize this, and they, moreover, appreciate the fact that a ride with some object in view is a better demonstration than a mere aimless run through a park, so one of the features of the trade in that city has come to be the number of cars that wait outside the big office buildings between 12 and 2 o'clock. They are there—a great many of them—to take prospective purchasers to luncheon at home and return to their offices in good season, demonstrating their fine points in the process.

EXPORTS STILL EXPANDING

October Figures Bring Up a Handsome Total —Great Britain our Biggest Customer.

As a sign of the great strides being made in the exportation of automobiles and parts the monthly report of the Department of Commerce and Labor for October is for the first time set forth in detail. Its compilers have, instead of lumping the aggregate, itemized the accounts, and as a result it is now possible to learn just where the goods are going and to follow the growth of the foreign business.

The details show that during the month more than a third of the total of $133,988 is represented by shipments to Great Britain, amounting to $50,136, a brave showing compared to but $2,190 to France and $1,740 to Italy, although Germany's showing of $8,162 and other Europe $8,903 are more favorable. The remaining items of respectable proportions are $12,274 to Other West Indies and Bermuda, $13,464 to Mexico and $18,715 to British North America. The total for October, 1904, was $130,891.

The detailed report for October and for the ten months ending with that month is as follows:

	October.	Ten months.
United Kingdom	$50,136	$604,782
France	2,190	254,030
Germany	8,162	101,998
Italy	1,740	154,325
Other Europe	8,903	222,817
British North America	18,715	501,765
Mexico	13,464	150,042
Other West Indies and Bermuda	12,274	124,552
South America	5,571	48,938
British East India	3,620	28,602
British Australasia	4,043	85,548
Other Asia and Oceanica	1,318	60,591
Africa	2,716	28,737
Other Countries	1,136	2,894
Totals	$133,988	$2,389,621

Willis to Have Uptown Branch.

The E. J. Willis Co. has taken the first step toward the establishment of an uptown supply house. They have leased the four story building No. 231 West Fifty-fourth street, New York, for a period of ten years, and after it has been altered to meet their requirements they will take possession, which will be about February 1. The Willis Co. will also maintain their downtown store at No. 8 Park Place, discontinuing, however, the one directly across the street, which was used chiefly for second hand cars.

Pitkin Wins Newark, N. Y.

Newark. N. Y., is going to have an automobile factory. By paying $1,000 a year rental for an old factory building in Newark, the Board of Trade has induced James M. Pitkin, of Rochester, to come to the village and build automobiles. He will bring fifty "families" with him. Mr. Pitkin naively tells the board that as soon as the factory is firmly established it will be able to turn out one car per day.

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FISK MECHANICALLY FASTENED TIRES

are receiving more favorable comment to-day from competent judges of tire qualities than all other makes combined.

It is because we know how to build tires that will insure the user Comfort, Safety and Tire Economy.

No matter how much you have enjoyed your car in the past, FISK TIRES will surely add to your pleasure by physical and mental relief—and lessen your tire maintenance by half.

THEY RIDE EASIER, WEAR BETTER, AND HAVE BEEN PROVEN SAFER THAN ANY OTHER TIRE MADE.

HAVE YOU EVER TRIED THEM?

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES:

NEW YORK, 754 Seventh Ave.
BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Bridge St.
PHILADELPHIA, 138 N. Broad St.
MINNEAPOLIS, 704 Henepin Ave.
ATLANTA, 103 N. Pryor St.
SYRACUSE, 423 S. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 318 Euclid Ave.
LOS AGELES, 1034 Main St.
DETROIT, 254 Jefferson Ave.
CHICAGO, 1251 Michigan Ave.
KANSAS CITY, 1330 Main St.
ST. LOUIS, 3908 Olive St.
SAN FRANCISCO, 114 Second Ave.

YOU CAN DEAL WITH US FROM A DISTANT POINT THE SAME AS AT THE FACTORY.

CADILLAC UTILITY

THE SINGLE CYLINDER CADILLAC
Will climb any hill that any automobile will climb.

THE SINGLE CYLINDER CADILLAC
Will travel any road that any automobile will travel.

THE SINGLE CYLINDER CADILLAC
Will travel as fast as anybody ought to ride.

THE SINGLE CYLINDER CADILLAC
Costs less to operate. Costs less to Maintain.
Requires less attention than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined, and won for them the unquestioned distinction of

AMERICA'S LEADING MOTOR CARS.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers.

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JANUARY 13-20, 1905.

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THE MOTOR WORLD

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To Facilitate Matters Our Patrons Should Address us at P. O. Box 649.

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NEW YORK, DECEMBER 7, 1905.

THE

NEW YORK

SHOW NUMBERS

of

THE MOTOR WORLD

Will Bear Dates

January 9th and 16th.

As always, they will deal with the subject intelligently and well and be thoroughly representative of the industry.

Pennsylvania's Vicious Provision.

In at least one respect Pennsylvania's new law, which becomes effective January 1 next, is more despotic than the Russian measure in force in Massachusetts. It says that after the penalty of fine or imprisonment following a second conviction shall have been paid, the offender's right to use his private property on the public roads shall be revoked; it is made imperative. In Massachusetts it is optional with the State Highway Commission.

It will be interesting to discover whether there is any more spunk in the motorists of the one State than there is in those of the other. It is bad enough to make the use of the public roads a special privilege, which must be paid for, but to hold that after that exaction or extortion has been satisfied and after an offender has also paid a fine or served a term of imprisonment, he shall be deprived of the right to use his personal property, is a condition of affairs that strikes at the fundamentals of personal liberty and constitutes a menace to republican institutions.

After he has paid its penalties, law, or justice, rather, cannot pursue an offender beyond the confines of a court or a prison, else freedom becomes a farce and a mockery.

The Detachability of Tires.

Of course, ther are those who have not as yet reached that stage, but it is safe to say that the majority of people who have to do with automobile tires have come to the conclusion that rubber is rubber, and nothing else. There is nothing else just like it, nothing that will take its place, and there is no hope of ever being able to manipulate it in a manner that will overcome its present shortcomings altogether. They may have done so at one time, but no longer cherish any fond delusions as to the arrival of the millenium in the shape of an absolutely non-puncturable, never-wear-out, just-as-good as pneumatic tire that is never anything else but a joy and source of delight to its owner. They have also come to the conclusion, usually after more or less costly experience, that while "just as good as pneumatic at a fraction of the cost" sounds very alluring, it is very deceiving and usually means nothing more than a shifting of the source of expense.

These experienced owners, and their ranks are constantly being recruited, look more to facility for repair—for improvement in the means of attaching the tire which will permit of its ready removal, when demanded by the necessity for repairs. Mechanical fastenings of many kinds are the outcome of this tendency, practically all of them having in view the elimination of a multitude of small parts for holding the tire in place, as well as the struggle in forcing the tire on and off the rim. Devices embodying these qualifications have been placed on the market previously, and have met with more or less success, but it is evident that they were not fully appreciated at the time of their advent, due to their own shortcomings probably. But some have survived and the number that will be on view at the coming shows will be strong evidence of the trend in this direction as well as the general recognition it is being accorded by manufacturers.

The Fuel Problem.

It is possible that a solution of the motor car fuel problem, which with the growing use of the motor vehicle and the apparently unavoidable shortage of the petroleum compounds in the future, is of the greatest importance, may be found in an adaptation of the by-products of the distillation of coal in the manufacture of illuminating as. It is a well known fact that the residual products of the gas retort are strongly analagous both in molecular structure and in their properties to the petroleum products. Indeed, so intimately are the two groups connected in every respect that many of the derivatives of each are used both in combination and as substitutes for one another with considerable success.

Something over a year ago it was said that experiments were being carried on in France by M. Serpollet, constructor of the steam car which bears his name, who was testing a fuel derived from a by-product of the gas house, which was subjected to a purifying process and which, with certain additions, served to considerable advantage and economy as a fuel in his own machine. Still more recently tidings have come from England to the effect that J. W. Brown, an engineer of the Nottingham gas works, has been at work upon a fuel which is a type of benzol having a specific gravity of .88 or thereabout, and a flash point of 56 to 60 degrees; also he has experimented largely with toluol, both of which are coal tar derivatives, and has found that either of them will work very satisfactorily either alone or in combination with gasolene. In the course of his tests he has come to the conclusion that one gallon of the

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tar product is equivalent to about one and one-fifth gallons of simple gasolene.

One of the gravest features of the question of the limitation of the petroleum supplies of the world lies in its uncertainty. The well known characteristics of the oil well of flowing freely one day and going dry the next without apparent reason causes the scientist to have the gravest doubts as to the future. With the earth's supplies of coal, on the other hand, there is much less cause of alarm, for, though they are far from inexhaustible, and though the draught upon them is growing at a frightfully rapid rate, their extent and location is determinable with so great a degree of accuracy that there is, as we are told, little or no cause for uneasiness on that score. Hence if a combination of the true petroleum products with some of the elements of the coal distillation which now go to waste or have but a limited usage can be effected, or if the use of the latter alone can be made possible either by refinement or by effecting some sort of alteration in the present means of carburation, a great gain will have been effected.

On Taking Things for Granted.

It is a presumption of general currency that every person is in full possession of all his faculties, and it is a belief on the part of drivers that more or less often leads to accidents, and probably more frequently to very "close shaves."

There can never be any certainty that the man who chooses to amble down the centre of a one wagon country road, can hear and see as well as the average normal human being, though this is generally taken for granted. Tooting the horn is usually efficacious, particularly if the instrument in question happens to be a young pipe organ tuned well up in the higher register and blown by a forty horsepower engine, but there are cases on record where even this has failed to make an impression, and the driver, realizing his mistake too late, allowed the car to perform that service on the pedestrian—the man was not absent-minded, he was stone deaf. Like the majority of his kind, he had a habit of occupying the middle of the road.

There also is the man who is fond of doing the same thing, always proceeding to lose himself in his thoughts as utterly as if he were on another planet, the moment he achieves the coveted place in the middle of the road. He must be regarded as in the same class as the man who is lacking one sense. And the nearsighted individual should be included also. On the whole it is just as well not to take it for granted that every user of the road is sound and sane. Such a presumption might prove disastrous if indulged in near an asylum for the deaf, dumb and blind.

Tests of Tires.

Just what is to be learned from an official test of a number of tires, carried out under a lengthy code of strict rules and regulations and with the results calculated to a nicety, will be made known during the early part of the coming season, should well laid plans not miscarry. There have been tire tests before—one of side splitting memory held within a few miles of New York City but a few months ago. Up to now they have not been of the same serious import to the trade in particular and the automobile industry at large as the sponsors of the coming events would have it believed. These, indeed, be serious events of the first water, from which much is to be gleaned in the way of weighty statistics—that may be filed away for good.

France, having done her best to belittle the road racing game, principally because she was not permitted to continually have the biggest finger in the pie, finds that success in this direction has been attended with at least one unlooked for result. Her national prestige is well established, but it will not remain so long under attacks of foreign competitors, and a complete withdrawal from prominent events would savor too much of retirement.

The outcome is the "concourse d'endurance," which if certain elements gain the ascendant will be purely a French affair, a "circuit Francaise," or, on the other hand, a "circuit d'Europe." The former desire is still an outcropping of the same spirit that dominated affairs just prior to the Bennet Cup race, but regardless of the course over which the event is run, it is apparent that the French maker does not wish to be considered as having drawn into his shell, hence the Coupe de Bandage or tire cup. As if to go the French one better, the Automobile Club of Great Britain has quietly planned an event on a vastly more ambitious scale, and while their Gallic competitors across the Channel were wrangling over details settled the matter to their own satisfaction. Only one thing is lacking, and like the refusal of the inventor's dream to operate as calculated, it is a rather important detail—the consent of the tire manufacturers to supply the tires and pay well for having them worn out under official auspices. Should the latter gentry be sufficiently philanthropic to pay handsomely for the privilege of learning something which they already know far better than their would-be instructors, in the hope of attaining a doubtful measure of prestige for their product in case of success, the events in question will doubtless prove of considerable interest to the remainder of the automobile world at large.

Steam and Gasolene Engines Compared.

In the steadily increasing number of cylinders given the motor, a practice that has culminated in the design of the 1906 model by the use of as many as eight, in one instance at least, cast independently and placed single file, it is curious to note the great discrepancy between the internal combustion engine and the double acting steam engine as regards the number of impulses given the crank shaft per revolution.

All reciprocating engines, unfortunately, have two dead centers, and the four-cylinder gasolene motor has three strokes per cylinder during which the crank shaft receives no turning impulse, so that it is necessary to have at least four cylinders to equal a single cylinder, double acting steam engine in this respect. Consequently six cylinders are equivalent to a three-cylinder, single acting steam engine, and eight cylinders equal a two-cylinder, double acting steam engine, so that in the adoption of the latter number the internal combustion engine is brought on a par with standard locomotive practice in this respect. Naturally, the greater the number of cylinders employed the more perfect will be the turning and the less noticeable the dead strokes—the compression strokes and the dead centers—provided the impulses are equally spaced. It is merely a question of exceeding the point where the amount of mechanism involved exceeds the benefit to be gained as well as the space available.

Once upon a time there was a man who, being highly incensed at the great cloud of smoke which was to be seen pouring from the exhaust pipe of his automobile, said to his chauffeur: "Here, get down under there and let some of the oil out of that crank case. And take off that coat. I can't afford to buy clothes for you to rub in the dirt like that." The young man, having a mind of his own, promptly and firmly refused and was "fired" on the spot. In process of time his successor was elected, who, being told the tale of the other's undoing, thenceforth put no more oil in the engine at all.

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TIRE TEST OF 4,000 MILES

Great Britain Goes France More Than "One Better"—The Rules that Will Apply.

Not to be outclassed by its French competitor, the Automobile Club of Great Britain has decided to hold a tire trial next season. It has gone about formulating regulations and conditions with a commendable lack of friction that unfortunately was not characteristic of the French article. While some French and most of the German manufacturers invited to participate have raised a complaint as to excessive distance, the Britishers have calmly jumped this disputed point to the unprecedented distance of 4,000 miles. The tests will be carried out under the following conditions, in accordance with the set of regulations just made public.

The subjects of the test are as far as possible to be ordinary stock tires such as are offered for sale daily and are to be selected by the club committee. They will likewise be used under ordinary touring conditions. Each entrant must provide cars meeting the approval of the club, for the purpose of the trial, and stand all expenses connected with their running. The club will supply official observers and award certificates of the actual performance of any set of tires entered for the trial.

A number of classes have been provided and are defined as follows: A set of tires in classes A, B, C and D shall mean four tubeless (single tube) pneumatic tires or four outer covers and four inner tubes. A set of tires in class E shall mean four inner tubes and four covers each with a protective device. Sets of tires in classes F, G, H and I shall mean four solid rubber tires, or six if double tires be used on rear wheels.

Competitors will be permitted to use extra tires, covers, tubes or protective devices, provided the latter be taken from a supply that the club committee has selected and marked before the opening of the trials, on the further condition that all such parts as shall be replaced are handed over to the club as worn out. Such replaced parts are not to be returned to the competitor during the course of the trials for any purpose. At the end of the trials all tires and other parts used be replaced during the trials are to become the property of the club to be dealt with as the committee shall see fit.

The entry fees are based on a sliding scale, decreasing with the number entered and as they are figured with a high factor of safety to cover expenses, the manufacturer of tires will find it no inexpensive game to play, counting the several hundred dollars' worth of material which he will forfeit in addition, unless the club committee should deem it proper to return the used tires after examination. If the number of sets of tires entered from all sources be not less than five, or more than ten, the entry fee for each will be $500 per set; if between ten and fifteen, $375 per set; up to twenty, $300, between the latter figures and thirty, $275, and over thirty, $250.

For the purposes of the trial the cars are classified as follows: Class A, light cars; the total weight in running order not less than 1,500 pounds, including two passengers, of an average weight of 150 pounds. Class B, medium cars; total weight not to be less than 2,400 pounds, including four passengers of the same average weight. Class C, touring cars, minimum weight, 3,000 pounds, including four passengers; class D, heavy cars, minimum weight with the same number of passengers, 4,500 pounds. None of the tires to be used on any of the four classes just enumerated may be protected by any device calculated to save the tire from wear.

Class E is limited to a group of combination tire and armored protective devices, and cars to which such protected tires are to be fitted are to be of a minimum weight of 3,000 pounds in complete running order, including four passengers. The remaining classes are confined to solid tires.

Classes F and G correspond to classes A and B, light and medium weight vehicles, for which the same conditions are prescribed in both cases. Class H is for medium weight commercial vehicles, which must tip the scale when in complete running order at not less than 6,000 pounds, including two passengers. Class I, the last, is for heavy comercial cars weighing not less than 14,000 pounds, with two passengers. All forms of spring wheels are entirely barred.

Entrants of pneumatic tires will be called upon to declare in the entry blanks the air pressure at which they will run their tires and the club reserves the right to test the latter where and when it sees fit, and to compel the entrant to adhere to his declaration.

As already stated, the distance to be run is 4,000 miles, to be divided into daily instalments of 200 miles each, the latter to be covered in 12 hours' continuous riding, at the expiration of which the observer must take it upon himself to see that the car is locked up. A set of tires failing to complete a day's run in 36 hours, or which is not ready to start on its run by 9 p. m. on any day, shall be deemed to be withdrawn. But this is not to be applied to delays arising from any cause other than tire failures. If any of the competitors are anxious to continue after having completed the 4,000 miles, he may do so by paying a fee of $10 per set of tires per day. A moderate speed is imposed, having due regard to other traffic on the road, and the driver must heed warnings of the observer, any disregard of the latter involving possible disqualification.

All stops of the "car wheels" are to be recorded, "voluntary" stops, being defined as those which the observer authorizes, such as stops of the car for legal requirements, traffic, meals, lighting lamps, repairs to car or mechanism, or for the convenience of observer or driver. The engine may be stopped when running down hill or during any halt. All involuntary stops are to be noted by the observer and recorded on the certificate. These are defined to be "any stop caused by failure of any part of the tires, or made for the purpose of carrying out any adjustment or repair which if not carried out might cause such failure. Adjustments and repairs to the tires are to be carried out by the driver and mechanic only and the length of time consumed will be noted and form part of the record on the certificate."

February 1, 1906, has been set as the date of the start, the routes being on main roads in the vicinity of London. They will be selected by the club, and the drivers will be given general particulars each day, and are to be held accountable for following them. If the day's route be missed, the driver is to return to the point at which he departed therefrom. Should the whole route for the day not be completed by any car, it must complete the same route on the following day.

The size, weight and price of the tires entered in relation to the weight carried are to be taken into consideration in making the awards, which will consist of a gold medal for the most meritorious performance, and a silver medal as second prize, provided there are at least four entries in a class. A certificate will accompany these awards, and will be granted other entrants, the club reserving the right to record thereon a list of the parts, which in its opinion exhibit an undue amount of wear at the end of the run, or any other observations of similar nature.

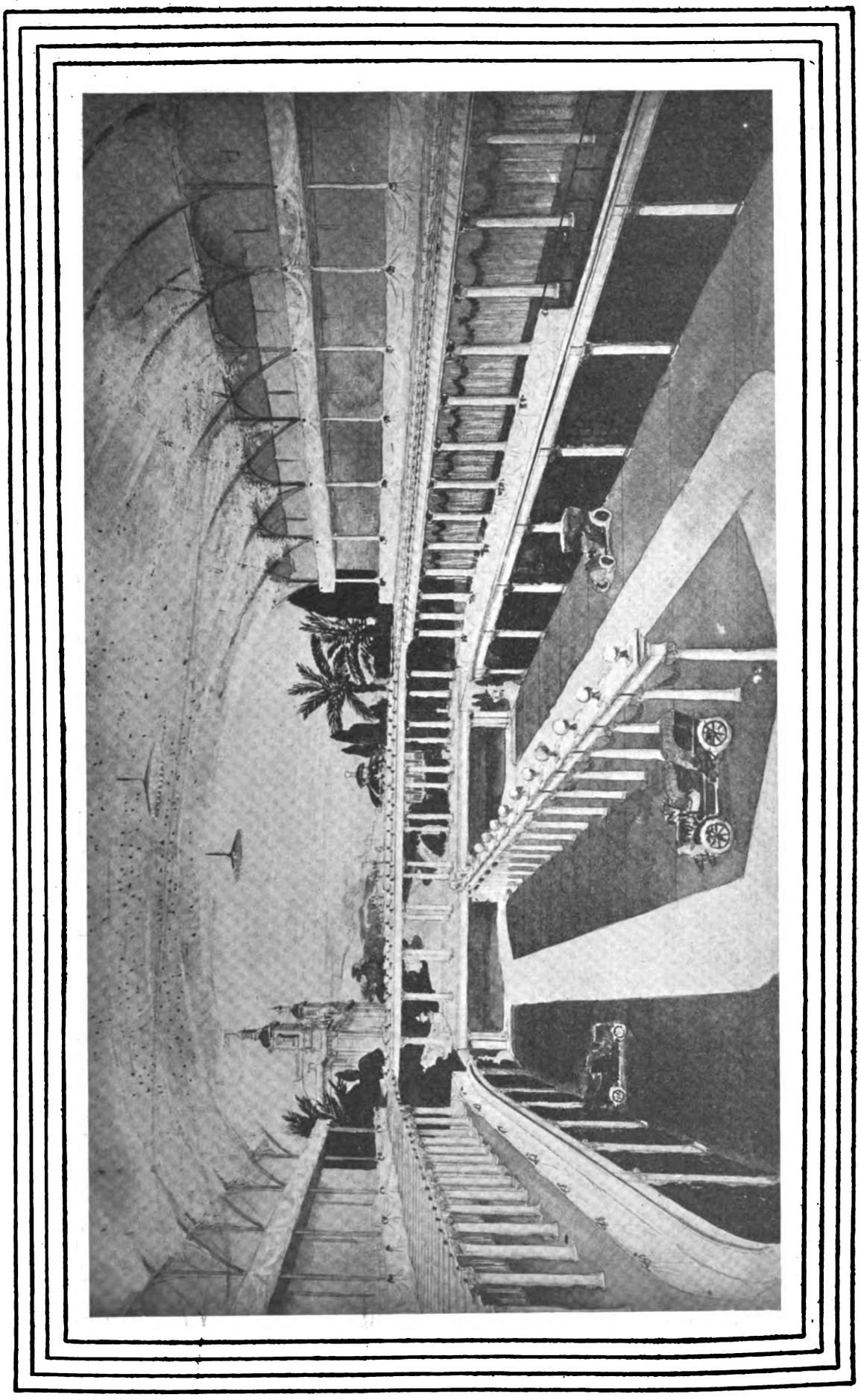
Every competitor in entering binds himself to accept the official records of the club as final, and further authorizes the latter to publish them as it sees fit. He further agrees to publish only the full and complete certificate issued by the club, besides binding himself not to publish any other matter relating to the trials and the performance of his tires therein without the written consent of the club, given after passing on proofs submitted for the purpose.

French Kick About Tire Test.

Although, as recently reported, it was considered that all obstacles in the path of the proposed French trial had been swept away by the agreement of the manufacturers and the French club regarding matters of detail, it would appear that everything is not yet serene. As originally outlined, the race was to be a "European circuit," and it is somewhat to be wondered at that the usual French spirit has not cropped out earlier. It is there, none the less, though a little belated, and now the demand is for a "Circuit Francais."

"Bring foreign contestants to France rather than expend French energy and money outside of the sacred dominions—the other side of the frontier," say these malcontents. There are, however, those who maintain that it would be more profitable for the French maker to exploit his product to the foreigner. Both sides of the question will be considered and a report made to the club.

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DECORATIVE SCHEME OF THE MADISON SQUARE GARDEN SHOW.

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BEAUTIFYING THE GARDEN

Forest, Fountain and Classic Decorations for A.L.A.M. Show—Telephones in Every Booth.

After a judicious whetting of appetite, the Association of Licensed Automobile Manufacturers has finally permitted to be released a definite picture and a definite idea of the decorative scheme that will prevail at the Madison Square Garden Show, concerning the beauty and effectiveness of which so much has been said. The illustration on the opposite page indicates that reports have been well founded and that the Garden will "bloom" as it has never bloomed before. Of course, the color effect is lost in the picture, and no description can do full justice to the appearance the Garden will present when the doors are thrown open on the night of January 13.

The color scheme is white and gold, with the proper enrichment by contrasting colors. Large plaster or staff columns ten feet apart, supporting the classic cornices, which will contain signs of each exhibitor, are to form a distinctive part of the show. The entire cornice will be illuminated by thousands of electric lamps contained in a reflector, and this, together with the new electroliers, especially made for the purpose, will make the Garden as light as day.

At the entrance will be the heroic emblem containing the figure that has been used as a poster. Under it will be a fountain of running water, on which will be played different colored lights, making a novel and attractive feature upon entering.

Many skilled sculptors and modellers are being employed in the figure work, the frogs and the other details that are to be used in the basin. These men will also look after the classic work. The staff composition is an especially prepared one, and has a brilliant whiteness that should contrast beautifully with the other materials used.

Upon the wooden flooring will be laid five thousand yards of thickly padded carpet of a rich golden bronze color. This is being especially woven for the show.

At the entrance to the lobby a forest effect will be in evidence, giving one the impression of natural, wild beauty, and this same forest effect is to be carried into the restaurant and basement.

The entire ceiling space of the Garden will be covered with a canopy of sky blue tone, in which stars will twinkle. For this portion of the decoration over twelve thousand yards of celestial blue material will be required and twenty-seven thousand stars.

Silkaline between pilasters of white and gold is to form the balcony decorations, and as the silkaline is to be made in box pleats, enriched by sprays of smilax, the effect is expected to be decidedly entrancing. The rear of the Garden will be covered with a special scenic painting representing an Italian garden, and it is here that the skill of the artist has been called into the most important service. The committee is now considering the advisability of adding heroic figures in plaster casts in the upper balcony.

The signs, which are to be made in white and gold, are on galvanized iron with wooden frames. The letters are in pure gold leaf with gold mountings and bevel edges.

This forenoon the press is to be conveyed in automobiles to where the work is being done and given a private view of the decorations themselves, after which the press men will be the guests of the A. L. A. M. at luncheon.

One other new feature that will be inaugurated at the Garden show will be the telephone service. There will be 150 telephones, with switchboard positions for eight operators. From the Garden to the Madison Square exchange will be sixty-five trunk lines, which is a greater number than is found at the Waldorf-Astoria, which has heretofore been the largest private exchange.

To properly handle the traffic twenty-three employes will be needed, to say nothing of the hello girls at the various booths. There will be a manager, two supervisors, eight day operators and seven night operators, with two relief operators and three messengers.

With this system in operation it will be possible for each exhibitor at the show to telephone to other exhibitors or to his office or factory, albeit it is a thousand miles away. There will be a special telephone directory for the Garden exhibitors.

McCrea Takes Up Trucks.

J. W. McCrea, former sales manager of the Royal Motor Car Co., has organized the McCrea Motor Truck Co. with offices in the American Trust Building, Cleveland, Ohio. He will not, however, build the vehicles but will have exclusive control of the sale of the product of the Champion Commercial Motor Vehicle Co., of Owego, N. Y., who have been making electric trucks for the last eighteen months. The factory has a capacity of 30 to 400 trucks per year. They are made in sizes up to twelve tons.

Purdue University Begins Work.

Purdue University's new automobile testing plant has had its initial tryout, and was found in perfect working order, according to reports from Lafayette, Ind. Tests were made on a 16 horsepower car, and the results came up to expectations. After a few minor changes in the apparatus tests will be given to several 1906 cars which are to be sent to Purdue for the purpose. The tests will be made by senior mechanical engineering students as thesis work.

Thieves "Lift" a Famous Trophy.

Just about twenty-four hours before it would have been returned from the Olympia show to the De Dietrich agency in London, the Pyrenees Cup was attached by some unknown member of the light fingered gentry, and probably not long after that consigned to the melting pot. Estimates of its gross value vary from $2,000 to $5,000, the silver alone being valued at $1,000.

REV. KURTZ WANTS A CAR

Quotes Scripture to Help Get it and Invokes Blessings in Advance—Preacher's Missive.

The Rev. Jacob Kurtz, of York, Pa., used to be a "drummer." But one day he heard a voice from Heaven, and as a result he is now in the preaching business. The Rev. Jacob has not, however, lost one of the chief requisites of the travelling salesman. He wants an automobile, and he is'nt afraid to ask for it. Jacob wants the car so badly that he had printed a circular letter making known his heart's desire.

If all the manufacturers who received the communication had felt in the mood of giving away such a trifle as a touring car—the Rev. Jacob is specific on the point; he evidently wants no little runabout—the Pennsylvania preacher might now be able to set up the largest automobile establishment in his State. At last accounts he was still wanting the car, and there is no news of an overwhelming rush of "liberal donations," which the Rev. Jacob also suggested.

As an interesting exhibit, Mr. Kurtz's letter is worth reading. Here it is:

THE LORD LOVETH A CHEERFUL GIVER.

I was a travelling salesman. The Lord called me, and I abandoned all occupations, and am obeying. My convictions are that my mission is to preach (or teach) Good News and Glad Tidings to the broken hearted, the poor, the captive, to get God's Word into the hearts of men, women and children, in the highways and the byways.

I have made four successful mission journeys, first, 1,000 miles; second, 200 miles; third, 150 miles, and fourth, 600 miles on these tours. The report would show an average of twenty one-minute sermons preached every day, at meetings varying from one to 500 or more hearers, composed of beggars, and working men, in waiting rooms, at trolley and railroad stations, open air meetings, walking along the street, to those going to work; gamblers, social card-players, poolrooms, bar tenders, lawyers, legislators, mayors of cities, teachers in the Board of Education, Philadelphia, Salvation Army, Bowery, New York City; idle men in Chatham Square, New-York City, market places, political conventions, and all those who would give their ears to the Word of Jesus. This was done by walking and riding, and kept going by small donations from the people. Many of the hotels entertained me, also Y. M. C. A.'s. I received donations from ministers of every denomination, and even Catholic priests. I gave them all the same story.

My experience teaches me that the good work in which I am engaged would be very materially advanced if I were able to make tours in an automobile touring car. I need to have a more attractive way of getting the attention of the people. The great General of the Salvation Army is making quite an extended tour in an automobile touring car. It is said he thus attracts the attention of people. The idea is fitting and proper. An automobile touring car fitted up as I see it, would help greatly to carry forth the message in the home mission field.

I kindly ask you for a liberal donation for the desired car, or the car itself. May God bless you, and help to give to the poor, and known that you are lending to the Lord.

REV. JACOB KURTZ.
No. 650 West King St., York, Pa.

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The Man on the Front Seat.



DAVE HENNEN MORRIS, PRESIDENT AUTOMOBILE CLUB OF AMERICA.

'Frisco Creates a Record!

"Forty million dollars four miles in four hours" is an automobile record that is not apt to be approached for some time to come, if in fact there will be any desirous of emulating its performer. Upon the consolidation of the Wells-Fargo with the Nevada National Bank in San Francisco, $40,000,000 in currency was transferred in a car from one building to another.

Club Formed in Mormo land.

The Beaver County Automobile Club, of Beaver City, Utah, has organized by "taking out its papers" with $3,000 capital and electing these officers: President, J. D. Macauley; vice-president, W. H. DeWolfe; secretary, E. S. Sawyer, and treasurer, George B. Greenwood.

Three Ordinances in St. Louis.

Three bills affecting automobiles were introduced in the St. Louis City Council last week by Councilman W. A. Gardner. One provides for the reduction of license taxes on automobiles, as follows: Pleasure cars, $5; for business or trade, $10; motorcycles, $3. The second bill makes it a misdemeanor to operate an automobile at night without a light, punishable by a fine of from $25 to $500. The third bill provides for the licensing of chauffeurs.

A. C. A. to Enlarge its Limit.

A special meeting of the Automobile Club of America has been called for December 15 to consider raising the membership limit from 700 to 1,000. There are now over 100 names on the waiting list.

New York Make New Nominations.

The following ticket has been posted to be voted upon at the annual meeting of the New York Motor Club, which will be held on Thursday night, 14th inst.: For president, W. J. P. Moore; for vice-president, H. M. Swetland; for second vice-president, R. H. Johnston; for secretary, A. B. Tucker; for treasurer, Frank J. Griffin. For directors—W. J. Morgan, M. L. Downs, Robert W. Haff and R. G. Howell.

Clarke Heads the Monmouths.

At the annual meeting of the Monmouth Automobile Club, of Asbury Park, N. J., the following officers were elected: President, W. G. N. Clarke; vice-president, J. P. Hickman; secretary-treasurer, George Pittenger. The treasury is in a healthy condition.

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KELSEY THE "WHOLE THING"

Visits Baltimore and Wins Everything in Sight —Good Going on a Treacherous Track.

C. W. Kelsey, of Tarrytown, N. Y., who has been driving the Maxwell cars with fair success in stock car events this season, was the particular attraction at the Electric Park automobile and motor bicycle race meet at Baltimore, Md., Thanksgiving Day, 30th ult. Kelsey won every event in which he was entered.

Over two thousand persons braved the raw northwest wind and vigorously applauded the contestants, more to keep warm than to vent their enthusiasm. The track was too muddy for speed, and this condition kept several big cars—"Big Liz" in particular—out of the contests. In a workout in the morning Robert Atkinson, 30-horsepower Pope-Toledo, skidded on one of the greasy turns and hit a telegraph pole. Neither he nor his mechanician was hurt, but the car was discommissioned.

Five cars started in the two-mile selling handicap. W. C. Hood, driving a 16-horsepower Rambler, had a handicap of 10 seconds, and led the procession for half a mile, when S. M. Smith, who was imported from Philadelphia to drive a Reo, with two and one-half seconds handicap, overhauled him. It was not until the bell lap that Kelsey swung into the lead, and then Smith gave him a hard chase to the tape, the former winning out by only a few feet. In a five-mile match between Hood's Rambler and Smith's Reo the latter made a runaway affair of it.

Kelsey won in a walk the two-mile horsepower handicap, and also in the five-mile open. The latter event would have been interesting had not Smith's car run out of gasolene.

Ray "Chic" Thomas, astride a 1¾-horsepower Indian, treated the crowd to a few thrills when he defeated Herbert Weber in the motorcycle pursuit race. Several times Thomas nearly skidded on the turns, but managed to keep his machine on the track and lapped his opponent at four and one-half miles. "Champion" Callahan was to have started, but his foreign motor refused to mote. Summaries:

Two-mile selling handicap—C. W. Kelsey, Maxwell, first; S. M. Smith, Reo, second; W. C. Hood, Rambler, third. Time, 4:16 2-5. Also ran—George Davidson and Charles Vincent.

Two-mile horsepower handicap—C. W. Kelsey, Maxwell, first; S. M. Smith, Reo, second; George Davidson, third. Time, 4:02.

Five-mile handicap—Walkover for C. W. Kelsey. Distance, four miles. Time, 7:30.

Five-mile touring car match—S. M. Smith, Reo, first; W. C. Hood, Rambler, second Time, 10:50.

Unlimited pursuit, motorcycle — Ray Thomas, first; Herbert Weber, second. Distance, four and a half miles. Time, 8:30.

Want Motorists to Pay Heavier Tax.

That highly enlightened body, the West End Improvement Association, of Newark, N. J., is going to tinker with New Jersey's automobile law, judging from the stand taken by the organization at a meeting last week, when it appointed a committee to draft and present to the coming legislature the amendments it thinks necessary.

The matter was brought up by Alfred Kaas, who declared that automobilists were not taxed enough, inasmuch as their machines endangered the lives of other persons using the roadways. They created dust, he said, which menaced the health of the public. He favored increasing the tax and having it collected and distributed by the State authorities. This money, Mr. Kaas thinks, could be used by the different municipalities in making good roads and keeping them in shape so that in the end, according to his views the automobilists would reap as much benefit as the cities and towns. The organization will seek the co-operation of other associations to assist it in agitating such a law.

New Havenites Ascend Mount Carmel

Somebody held a hill climbing contest up the side of Mount Carmel, near New Haven, Conn., Thanksgiving afternoon, but the affair was not a glowing success. It was the first attempt at this kind of sport, and there was no classifications, anybody and everybody being allowed to compete. There were only ten starters, however. A Mr. Potter, driving Mrs. G. P. Barners 40 horsepower Locomobile, won the loving cup, making the ascent of three-quarter mile slope in 3:17 2-5. W. F. Moran driving a 20 horsepower Stevens-Duryea, finished second in 4:01 3-5, and N. B. Whitfield, in a 10 horsepower Ford, was third. The latter made the ascent in 4:15½.

Woman, not Animal, Afraid.

Here is the latest tale of the skittish horse and the car that hails from the wilds of Iowa. The automobilist met an elderly couple driving a skittish horse attached to a buggy, and the animal exhibited a decided aversion to passing the unknown monster. The driver of the car stopped and dismounted to offer his aid in the solution of the difficulty, which was declined. "If you will please lead my wife by I think the mare and I can make it all right," was the old-man's comment.

"Thank You" Signs for Farmers.

An Appleton (Wis.) automobilist has introduced a new method of showing appreciation to the man who turns his team partly out of the road to make room for an automobile to pass. He carries a large sign with him, on which are printed in bold type the words, "Thank you." When he passes a friendly farmer he hoists the sign. The scheme is said to have pleased the farmers so mightily that several other Wisconsin automobilists are ordering the "Thank you" placards.

UP BOX SPRINGS CANYON

Californians Engage in a Four Mile Hill Climbing Contest—Timers Forgot to Tally.

With mufflers cut out and all but one stripped for the occasion, twelve light touring cars and runabouts raced up Box Springs Canyon, near Riverside, Cal., on Thanksgiving Day afternoon, 30th ult., in the initial attempt to locally popularize hill climbing. Only a few hundred persons viewed the contest, but this number was more than was expected, as in Los Angeles, close by, a new track was being opened and a football game was in progress, besides matinees in fourteen theatres.

Nearly four miles in length, made up of a splendid oiled road, upon which several thousand dollars was expended a few years ago, having only a few gradual turns and averaging an 8 per cent grade, a better course for a hill-climbing contest could not have been found than Box Springs Canyon. The start and finish was on the level, the distance between being exactly three and four-fifth miles. Communication between the points was held by telephone.

At 2:49:30 by the clock, W. K. Cowan, in a 20-horsepower Rambler, was waved off. Seven minutes later the green car flashed over the tape four miles distant. Cowan had a narrow escape when he struck the railroad track beyond the finish line. The jolt caused the driver to start heavenward, but he pluckily held onto the steering wheel until the car came to a standstill.

Next came a two-cylinder Tourist, with W. I. Moreland at the wheel. Eight minutes and fifteen seconds totalled its time on the road. Clarence Smith, in the Maxwell, third to start, attracted considerable interest, owing to the newness of the car on the coast. Eight minutes and two-fifths seconds was the best the combination could do, and then came Ted Crossley in the Wayne. His time was 8:25 3-5.

The only unpleasant feature of the day occurren when G. E. Bradbeer, in the air-cooled Premier, was sent up the incline. Bradbeer drove beautifully, and the hitch was when the timers gave out 6:43 4-5 as his performance. One man had this time—the others had forgotten to tally the minutes. However, Bradbeer's time will stand until it is proven otherwise. The only fully equipped touring car in the race was the Reliance, driven by J. Burt, so with this handicap it was not a disgrace to score the slowest time.

The performance of the cars that finished follows:

G. E. Bradbeer, 16 h. p. Premier	*6:43 3-5
W. K. Cowan, 20 h. p. Rambler	7:01
Honus M. Hanshue, 16 h. p. Reo	7:08
Ralph Hemlin, 12 h. p. Franklin	7:30 2-5
Fred Dufty, 16 h. p. Reo	8:01 2-5
Clarence Smith, 16 h. p. Maxwell	8:02 2-5
W. I. Moreland, 16 h. p. Tourist	8:15
Dr. Ferguson, 20 h. p. Moline	8:17
Theodore Crossley, 16 h. p. Wayne	8:25 3-5
J. Burt, 16 h. p. Reliance**	8:28 2-5

*Time questioned.
**With full touring equipment.

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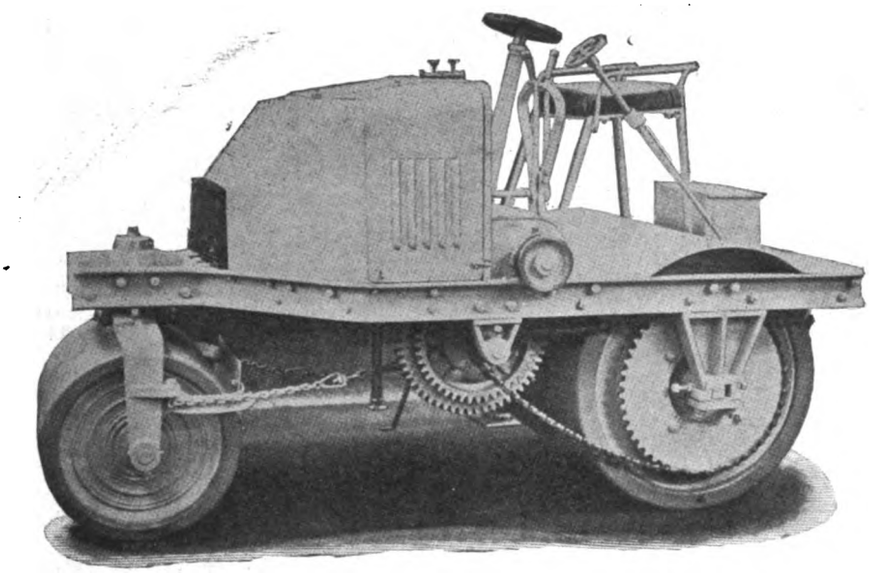
MOTORS IN UNUSUAL VEHICLES

How the Utilitarian Field is Being Cultivated—"Freaks" that Serve Good Purposes.

In any creative industry there are always to be found here and there specimens of the craft which are so out of the common run as to come under the harsh and unfeeling classification of freaks. There are, in the first place, the freaks which are produced in the regular line of the work, in the development of the stock forms which are in everyday use. They are the outre types which are cast out after they have proven their faults, and have been superceded by other and more worthy forms. Then, there are other freaks, which abide by no classification whatever, but have been made to fulfil a special need. With either class, the curious or unusual type of to-day, which is given that classification by the public—possibly, even by its makers—may to-morrow become exaulted to the position of first choice through its self-proven excellence, or it may be forgotten through its insufficiency. Thus, always, the freak of any type, is interesting, as a curiosity, because of its unusualness, and because it may be the prototype of a great line of models to come later on.

In the automobile industry which is distributing a widely divergent product over a rapidly increasing territory which embraces every land, and is bounded by every sea, the freak element of the first class is rapidly disappearing. For the design of the automobile has come to rest upon a thing of growing stability, which is called common practice, and the radical type of machine may well be said to be a thing of the past. On the other hand, the freaks of the second class, are growing in number—a thing which is as much to the credit of the industry as is the decline of the other class, for it is only in this way that newer types are to be founded and the broadening of the work go on.

This is particularly noticeable in the work of the builders of heavy commercial vehicles who are constantly being opportuned for motors to meet some new and unheard of demand. Thus, automobiles for peace and war are being produced side by side at the same factory, designed by the same men; machines for haulage of all sorts of materials; and machines for other uses as well, such as requisition the use of a portable power plant. A very good example of the breadth of the work in this special or freak line is given by the two illustrations here shown, both the recent product of the British industry, one of which is a gasolene road roller and the other a sewage wagon designed for use in Egypt.

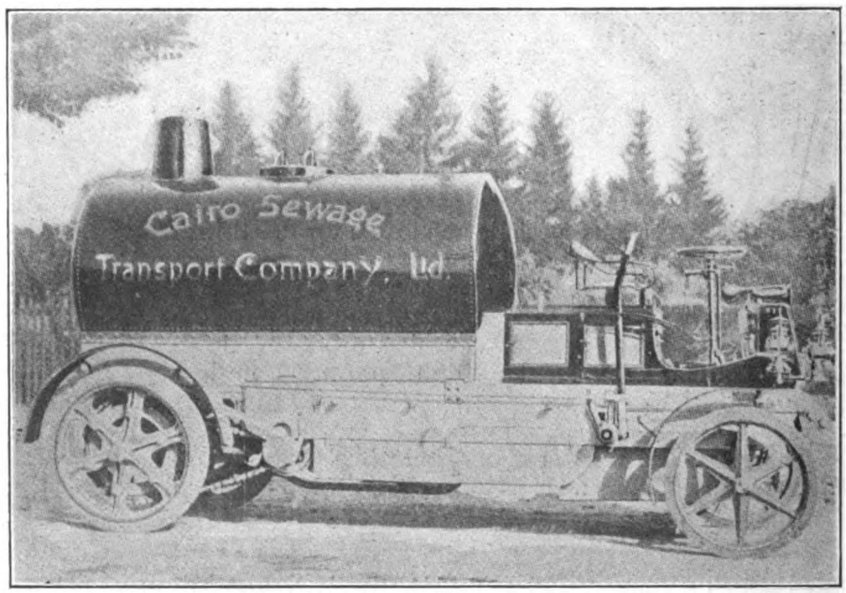


GASOLENE ROAD ROLLER.

The road roller which is particularly adaptable to light work, such as grading and lawn rolling, where the ordinary steam roller is far too clumsy and heavy for use, and where the common light horse rollers cannot be applied, consists of a heavy angle iron frame bearing upon a pair of solid rollers, the forward one of which is swivled to allow it to be used in steering. Between the two is mounted the motor transversely of the machine, set up and equipped as in an ordinary motor car. The transmissions of the power to the driving roll is made through a change gear mechanism and "side chain" drive.

The other vehicle—the garbage wagon—which, though possibly a trifle more ornamental and likely capable of making several more miles an hour than the roller, is intended for a less savory, though none the less important duty. As will be seen from the illustration the arrangement of the machine is not unlike that of the ordinary types of motor truck, the motor being housed in front under the driver's seat with the change speed mechanism directly behind it, and transmitting its power in the usual way by means of side chains to the rear wheels. A heavy iron tank is mounted upon its platform, which is fitted with special devices for filling and sealing up the openings during transit.

Aside from showing something of the possibilities of the automobile in unusual lines and proving its versitality, these freak missionaries are doing a vast deal of real profitable advertising for their makers in all sorts of odd and our-of-the-way corners of the earth, the sewerage wagon, for instance, being designed for use in Cairo, Egypt.



GASOLENE GARBAGE WAGON.

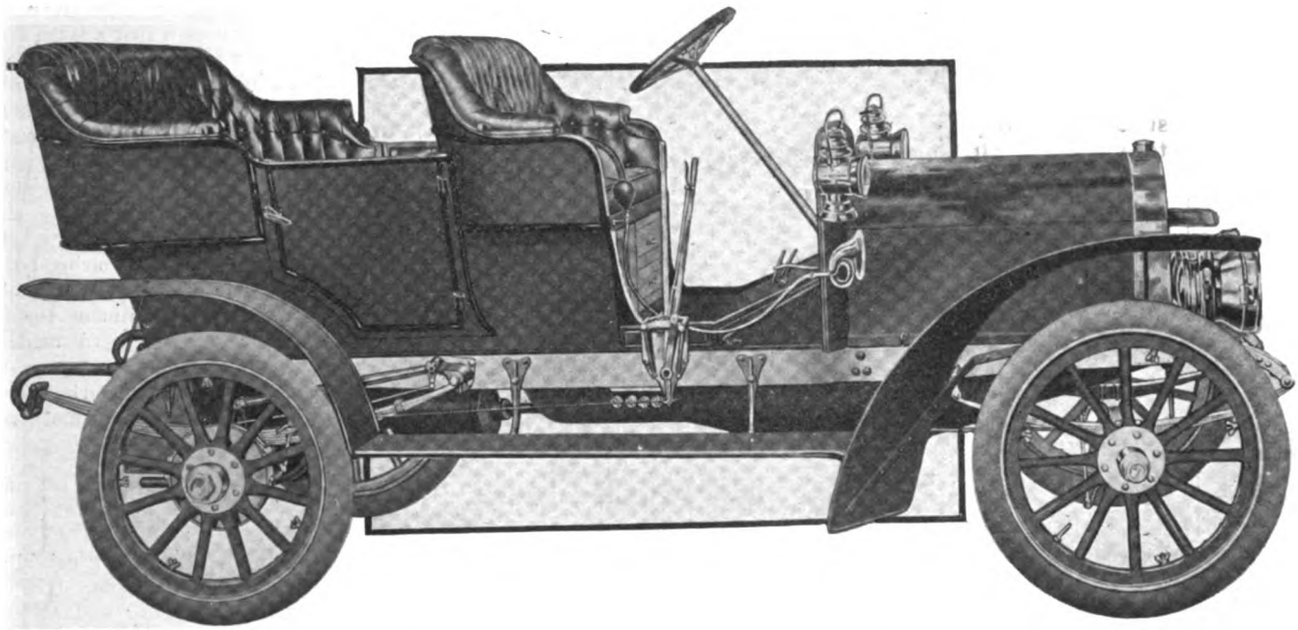
"This is not a bargain day in this court" was the response of a Chicago magistrate to the offer of an attorney to pay his client's fine if the latter were reduced from $15 to $10.

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CONCERNING COLUMBIAS

One New Model Appears and Older Ones Contain Some Ingenious "Touching Up."

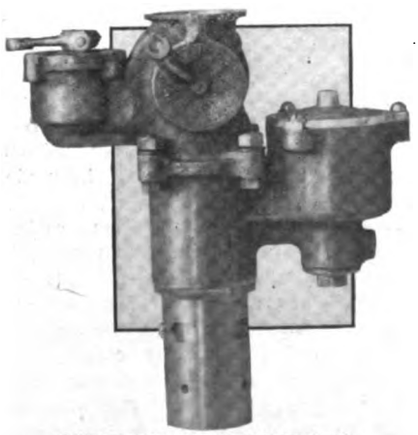
With the official title of Mark XLVI, there will be added to the Columbia line of gasolene cars for 1906 a medium powered vehicle which is in many respects a replica of the head of the list, Mark LXVII, more familiarly known as the "big car" and which is rated at 40-45 horsepower. The newcomer is likewise along practically the same lines as its heavier confrere, a fact that will be noticeable from the accompanying view of its exterior. It is, in brief, a car for the man who wants his purchase to represent the last word in the matter of advanced construction and refinements, but who is content with a moderate amount of power. Its rating is 24-28 horsepower, although this is said to be a conservative figure that has been considerably exceeded in practice.



COLUMBIA, MARK XLVI, 24-28 HORSEPOWER.

The engine is of the familiar four cylinder vertical type, the cylinders being cast in pairs with heads integral. The middle and lower sections of the motor are of aluminum, the weight being borne by a three point suspension attached to the mid section. Both sets of valves are located on the same side, one intake supplying each pair of cylinders. The valves are mechanically actuated, a novel convenience for their ready removal being provided in the shape of a lug cast on the cylinders and which admits of the insertion of a forked tool for compressing the spring. A gear driven paddle-wheel pump supplies water circulation, the arrangement being so designed as to maintain a uniform pressure in all cylinders. Lubrication is supplied by a continuous oil circulation, kept in movement by a rotary gear pump driven from the valve cam shaft. This pump has a capacity of fifteen pounds pressure, and forces the oil from a reservoir cast in the lower section of the crank case, through a conduit cast in the middle section, with leads to the main crank and cam shaft bearings and valve push rod guides. Dams around the overflow pipes maintain a constant level, and when the oil exceeds this it falls to the reservoir below, in the course of which it passes through strainers. Scoops splash the connecting rod bearings, the rods themselves working in a diaphragm, which serves to prevent an excess of oil in the cylinders, with a consequent fouling of the make and break hammer and anvil. An auxiliary oil tank piped to the reservoir is attached to the frame of the car and provides a supply sufficient for four hundred miles' running. Owing to the positive action of both the lubricating and ignition devices it is possible to speed the engine up as high as 2,200 r. p. m., so that the car may be geared low for hill climbing on the top speed without impairing its speed on the level.

In both the carburetter and ignition system the car makes radical departures from previous Columbia standards, these features being of particular interest. The former is of the float feed aspirating type, and is claimed to be the only automatic carburetter not embodying springs in its construction. Moreover, there is no needle, and, what is more peculiar, no place for adjustment, as none is necessary. The fuel enters the mixing chamber at the jet and meets the primary air supply. This primary intake is a one-inch hole pointing between the pairs of cylinders. Ordinarily this admits air at normal temperature, but is adapted to be lengthened by a pipe fitting connecting it with the exhaust for cold weather. In place of the customary spring actuated suction device for supplying auxiliary air, a series of small ports opened and closed by a barrel containing corresponding openings is substituted. This barrel is accurately made of the required size and weight to offer the proper amount of resistance to the engine suction as the speed increases. It thus rises slowly, opening the ports, and drops back easily of its own weight against the air cushion formed in the bottom of the containing chamber, as the speed and the demand for air decrease.



COLUMBIA CARBURETTER.

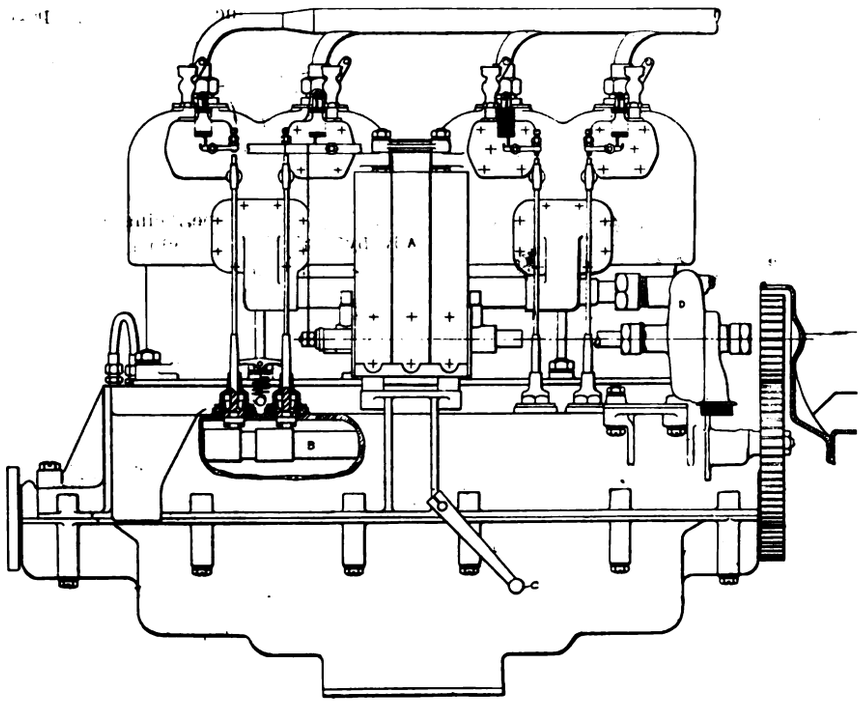
The throttle is also of the barrel type, set horizontally in the mixing chamber at the point where the gas intake pipe leaves the carburetter; it is actuated by a foot lever, and its function is confined to throttling the amount of mixture, there being no connection with the governor. The latter controls a by-pass valve, which is mechanically raised or lowered as the governor balls move in or out. An advantage of 25 to 40 per cent in fuel economy is claimed for this type, which with its lack of small parts and consequent absence of necessity for adjustment makes it a particularly desirable form. As fitted to both the medium and high powered cars, its external ensemble is pictured in the accompanying photograph.

A low tension Remy magneto supplies the source of current for the ignition system,

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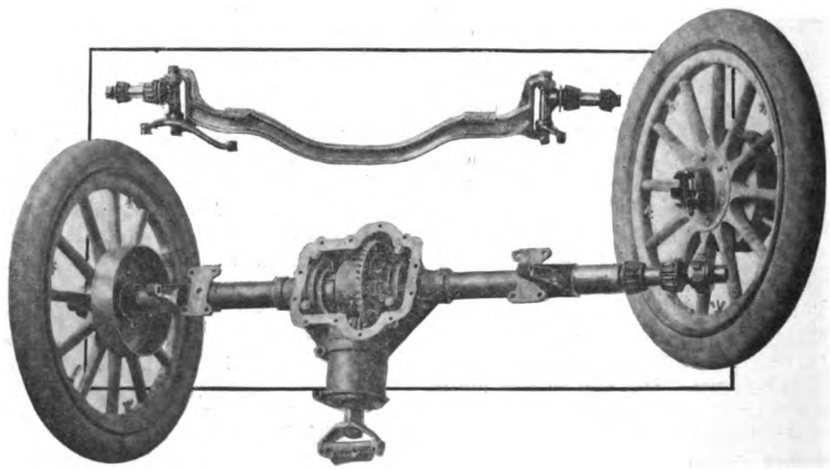
which, as already mentioned, is of the make and break type, actuated by roller cams. The details of this construction as well as of those of the engine generally are shown in the accompanying part sectional view from the ignition side.

The transmission is of the sliding gear type, giving three speeds and reverse, and in both this and the large car is the same as used in the latter during the last season, though various detailed changes have been made. Greater bearing surface has been provided for both the square and counter shafts, while a universal joint as well as a yoke take up any strains that may be transmitted from the clutch to the gear box. For all parts of this essential of the car, such as the gears, shafts and wheel pivots, a special chrome nickel steel is employed. It has an elastic limit of 135,000 pounds to the square inch and a tensile strength or breaking limit of 225 000 pounds. The sliding gears are also upheld by a three point suspension, the change gear lever working in a gridiron of selective spaces. It engages two short levers, right or left and forward or back, to secure the changes, with a spring ball and socket indexing device. The propeller shaft is of the telescoping pattern, bevel geared to the usual form of square live axle incased in a tube which extends through the hubs of the wheels. The wheels run upon roller bearings on this tube, and the square live axle carries at its outer end a square cap with dogs meshing with corresponding projections on the outside of the hubs of the driving wheels, combining to make a very effective form of drive. The entire construction of this car may be said to be upon the independent unit plan, cardan joints being interposed at each step or connection. Thus the motor is one, transmission another, telescoping shaft a third and the rear axle the final step, the use of universal joints between each allowing sufficient movement for torsional stress in any direction to prevent possible derangement of alignment. Brakes are of generous dimensions and powerful, operating with rods and rocker shaft except in the case of the emergency, in which a galvanized steel wire cable is used. Control is centred on a fixed sector, which is accordingly always in the same relative position to the driver's hand regardless of the angle of the wheel.



COLUMBIA ENGINE SHOWING MAKE AND BREAK IGNITION SYSTEM.

Practically the same description may be applied to the Mark LXVII, or "big car," which is in its essentials the same as the 1905 model. The use of the crank shaft cut from the solid block and turned true in a lathe, instead of the drop forging previously employed, and the substitution of a Lacoste distributor, as well as the type of carburetter already referred to in detail, summarize the only changes in the motive power. The features of the transmission dwelt upon in connection with the smaller car apply to the same item here, and constitute improvements made over previous practice. Roller bearings have been fitted to all wheels, and the rear axle construction has been redesigned to give rope and tire chain clearance. This as well as the front axle, which is a one-piece solid drop forging, are pictured in the accompanying illustration. The latter is the same on both cars.



COLUMBIA'S NEW FORM OF REAR WHEEL DRIVE.

The Columbia 18 horsepower two cylinder horizontal opposed car met with such success during the last season that a large number of the same class will be built for the coming season's business, practically without change. The frame has been lengthened 8 inches and the wheel base extended a corresponding distance, giving a roomier and more comfortable body. This also makes the car easier riding and provides a seating capacity of five without crowding.

Two distinct types of touring bodies will be made for the heavier car, one fashioned on the lines made popular during the last season and the other with accommodation for five persons in the side entrance tonneau. The royal and double victoria, as well as the brougham, limousine and landaulet bodies will also be continued.

Speaking of the 458 types of automobile which have been on exhibition at the Olympia show, a critic says:

"One of the most touching exhibits of the show was the motor hansom. It was just a hansom, with a radiator and an engine in the place that the horse used to fill, with all the old, delightful and honored inconveniences of entry and exit, with its driver perched at the back—a steering wheel in his hand instead of the reins—with (apparently) the same dear familiar privileges of falling through the front glass and gathering mud from the wheels. The new motor hansom could not copy the old one so closely, but it has a familiar and homely look, albeit it runs on four wheels instead of two—that will be the most persuasive and alluring inducement to the people of conservative order."

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ABOUT HYDRAULIC CLUTCHES

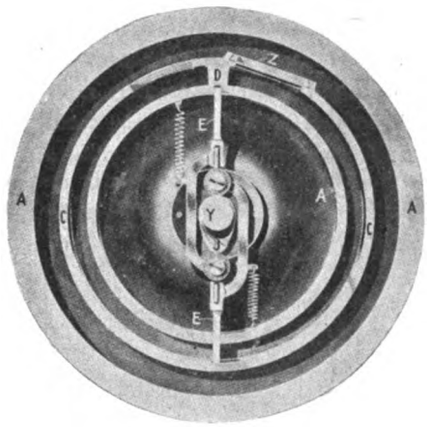
Purposes Which They Serve and How They Operate—Two Types From Abroad.

In an effort to secure a method of connecting the engine and driving gear of the motor car in a manner which shall permit of a due amount of flexibility at starting, and shall at the same time be perfectly rigid when the machine is in motion, numerous principles have been applied which range from the popular type of leather faced cone clutch, through the whole gamut of mechanical contrivances, to the application of the electro magnet. Of an entirely novel principle, the hydraulic clutch has this year come to take a place which, judging from its appearance at the British show, where a type is actually mounted on a stock machine, and from the returns of the patent offices here, and in other countries, is destined to become one of more than passing importance.

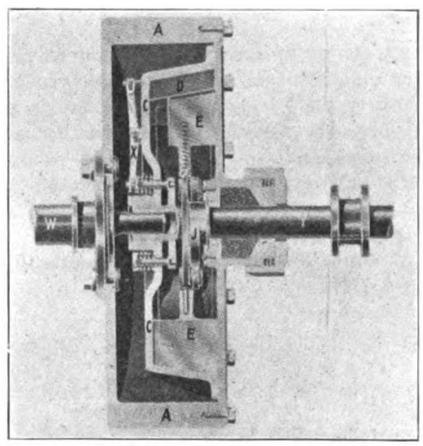
The entire advantage of the hydraulic principle as applied to the construction of driving clutches rests in the fact that by its use an unlimited amount of slipping between the two elements of the mechanism may be permitted without the generation of an undue amount of heat or friction, with consequent wear of the parts, and that in a measure which is wholly at the option of the driver. Essentially, the hydraulic clutch when disengaged, or permitting the engine to run free of the driving gear, is nothing more nor less than a pump which is forcing the liquid contents of the device from one chamber into another and so back to the starting point, the only resistance being that of the friction of the ports and of the fluid in its passage. When it is desired to start the car, the flow of the liquid is restricted by throttling until one of the elements which serves the purpose of a pump, being attached to the driving member of the clutch, and the other containing the passages through which the fluid is being forced, being integral with the driven member, the resistance to the flow becomes sufficient to unite the two and start the machine.

At this point a balance is struck between the forces which constitute the car's resistance to motion and those of friction within the clutch, the work of the motor being partially absorbed in heating the liquid and partly in driving the car. Should the resistance to the car's motion become increased at this point through the striking of an obstruction in the road, for instance, the shock will be absorbed by the clutch, the fluid being forced through its passages with greater velocity than before, but without other result than the generation of an increased amount of heat. By reducing the area of the passages or ports through which the liquid is being forced, the tendency to drive the machine is proportionally increased, until a point is reached where the liquid is no longer permitted to flow at all, and the drive becomes fixed, the only possible slippage between the two parts being due to leakage in the driving member.

In the Sparks-Boothby clutch, which already has been described in these columns in complete detail, the entire mechanism is inclosed within the flywheel, which is filled with oil. The flywheel, A, is bolted to the motor crank shaft in the usual manner, and the opening in the cover plate through which



the driving shaft, Y, passes, is packed to prevent leakage of the oil. A concave annular member, C, is fast upon the driving shaft, but free to move longitudinally upon it at the option of the driver, its normal position being such that it forms a tight joint with the face of the cover plate of the flywheel.



Thus the interior of the flywheel is divided into two compartments, which are connected through two openings or ports. Wthin this is a pair of vanes, E, which are slidably mounted in the driving member and are controlled by two yokes which are actuated by a cam upon the driven member of the mechanism. A stationary web or vane, D, is located within the annulus, C, at a point midway between the two ports, one of which is always open, while the other is controlled by a valve, Z, actuated by the operator through the medium of the link, X.

The action of the vanes, E, is that of the blades in a rotary pump. When the engine is running free they force the oil around the casing out of the port, Z, and in again at the corresponding opening on the other side of the vane, D, the purpose of the cam movement being to lift them at the proper time to prevent them from striking against it. When it is desired to start the car the valve, Z, is partially closed by the action of a foot pedal, thereby restricting the flow of the oil and creating a resistance which presently becomes sufficiently great to cause a movement of the annulus, C, and the driven shaft. As the valve, Z, is closed more completely the resistance increases proportionately, until at the point of full closure the oil which is confined within the space included by the walls of the annulus, one of the vanes, E, and the vane, D, becomes simply a rigid connection between the two members of the clutch.

In manipulation the clutch is not unlike the commoner type, being controlled entirely by a foot pedal, which in its normal position holds the valve, Z, in the position of full closure. Depressing the pedal opens this, until at the point of full opening the annular casing, C, is drawn away from its contact with the cover plate, A, and there is absolutely no resistance to the free running of the motor.

Another clutch which acts upon the same general principle, consists of a series of three cylinders radially mounted about the driving shaft within the flywheel, each of which is fitted with a piston actuated by an eccentric mounted on the driven shaft. Thus, when the engine is running free from the car the pistons are in motion, being driven by the stationary driven, or clutch, shaft, about which the cylinders whirl. The cylinders are filled with oil, and this is allowed to circulate between the two ends through a by-pass, the opening of which is controlled by a series of valves which are under the control of the operator. When the engine is to be connected with the mechanism of the car, these valves are closed until the resistance of the by-passes becomes sufficient to start the machine. This is gradually increased at the will of the driver until the point of full closure when, the circulation being entirely checked, the parts revolve in unison.

It is evident that by either of the means described, it is possible to secure any desired amount of slippage while engaging the clutch, and that without bringing into requisition that most uncertain and variable quantity, friction. The point about which hinges the smoothness of action of all the more common forms of clutch, and upon which their success depends is that of securing a uniform coefficient of friction under all conditions of climate and treatment, and of controlling that friction at the will of the operator. This is wellnigh impossible, inasmuch as the coefficient of friction between two metals or between a metal and some other substance such as leather or wood, is extremely variable, not only in corresponding parts which undergo different treatment, but as well in the same part at different times and under different circumstances. Hence, not only does the ordinary friction clutch require careful handling under all cir-

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cumstances, but it must have a proper amount of attention in order to secure from it its proper degree of efficiency.

In the hydraulic clutch, on the other hand, all variable conditions are done away with, and the action of the mechanism, whether under load or disengaged, is as certain as that of a pump, and, like it, is subject to the same causes of derangement or failure. With simple mechanism, however, and with well made parts, there should be little tendency to derangement or to slipping when in engagement, the only two apparent causes of disorder, while there should be no possibility of the organ breaking in such a way as to cause it to fail to release, as is sometimes the case with the friction clutch.

Liberality that Moved the Stage Line!

In solemn conclave, the directors of a motor stage company located not one hundred miles from New York, recently voted to devote a sum of money to a practical demonstration of the merits of a certain type of automobile which was said to be especially fitted for the work in hand. It was announced that the former demonstration fee of $100 had been rebated in this particular case to $25 by the liberality of the company handling the chosen motors, and that even that small sum would be deducted from the purchase moneys. The liberal company in question is one doing a so-called storage business, whose richly colored methods are not unknown to the reading public, and the cars referred to were made on the shores of the Hudson, not far from New York City, several years ago by a company whose name has ceased to be a byword. Accordingly, it is safe to prophecy that at least one stage line is due to obtain a large chunk of experience, and little else.

Marvelous Growth of Bus Service.

Some idea of the growth and present importance of the business of the London Motor Omnibus Co. may be gained from the statement which has recently been given out that between March of the present year and November the vehicles in use have travlled 480,473 mils in the aggregate, and have carried 4,680,345 passengers all told. The daily route of each vehicle amounts to about 130 miles, and the cost, including depreciation and all other factors, amounts to 19 cents a mile or thereabouts, which amounts to something like one and nine-tenths cents per passenger mile for the season. At the outset three 'busses were put into servic; now forty-six are in constant use.

Miller Gets an Anti-Freeze Compound.

Miller's Anti-Freeze Compound is the most recent addition to the wares of Charles E. Miller, New York. It is the result of considerable experiment by a chemist, a relative of Mr. Miller, and as the latter tried it on himself—that is, on his car—he is recommending it with the enthusiasm born of experience. Of course, the constituents of the compound are kept secret, but it is sold in 10-pound cans, enough for a winter's use, and is proof against temperatures of 30 degrees below zero.

JONES'S INGENUITY

It Evolves Some Strikingly Practical Improvements in his Speedometer-Odometer.

Probably the feature which will most strongly appeal to the user of the 1906 type of Jones Speedometer-Odometer, which has just made its appearance, is the arrangement whereby it is made to record the total distance traversed irrespective of the direction of motion. Thus a machine which, in the course of a day, covers fifty miles of actual distance on the road, and incidentally is driven backward for half a mile, all told, is recorded as having made fifty and one-half miles, instead of forty-nine and one-



half miles. The particular advantage of this arrangement, which may not be apparent at the outset, is, first of all, that the entire mileage adds up, and second, that the ambitious chauffeur who would spend all of his idle moments along side the car with the off fore wheel jacked up, industriously turning back the record of his clandestine use of the machine, now will labor not simply in vain, but very much to his personal disadvantage.

In principle and general construction, the new Jones instrument is not essentially dif-



ferent from previous models. Several minor improvements have been made, however, which make for a more uniform performance under all circumstances, and enhance its value to the user on that account. The addition of a trip mileage dial, such as has been used on the Jones odometer is an innovation on the new speedometer-odometer. In this regard a noteworthy point is that the setback mechanism, instead of being actuated by a thumb screw and a motion analogous to that of winding a clock, is now instantly operated by a push button, which resets the indicator at zero, as in a stop watch. The push button is conveniety located at the side of the instrument, and is easily accessible.

The season's milage is recorded up to 10,000 miles, and the trip mileage up to 100 miles, while on both dials fractional miles are indicated in red figures—another innovation. The figures, both black and red, are perfectly legible at all times, owing to the special mounting which has been introduced this year, so that all indications can be read at all times. The bracket upon which the instrument is mounted on the dash is triangular, and occupies but little space, the instrument itself being attached by a swivel contrivance, so that it may be turned in any desired direction to come into the driver's range of vision. The vertical shaft which conveys the motion to the instrument from the wheel, is also provided with a swivel, so that it may be led up to the dash from any point, and to either side, thus permitting the passage of the flexible shaft under the bonnet and up through the floor, or in any other way that suits the fancy of the driver.

The mounting is, of course, perfectly dust and water proof, and the casing is handsomely polished, while all parts are self-lubricating, and so substantially made that they are but little likely to become deranged under even the most severe usage.

New Type of Accumulator.

More attention has been accorded the accumulator as a source of ignition on the other side than in this country, which probably accounts for the great number of cells intended specially for automobile use that are to be found on that market. One of rather odd construction that made its debut at the recent Olympia Show is given the somewhat misleading title of "Solid," owing to the very novel form of the electrodes. The latter are made of alternate layers of pellets composed of oxides of lead and of spongy lead.

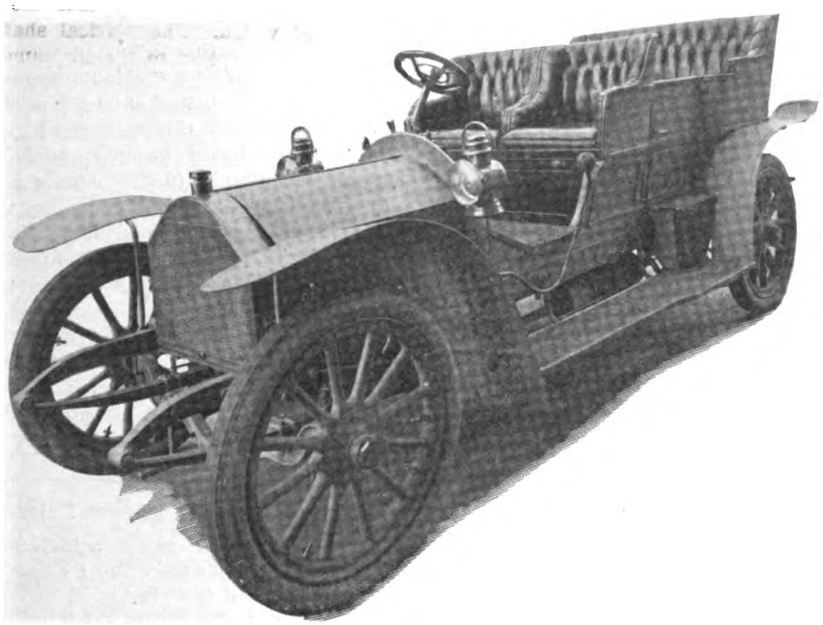
Although extremely hard, the pellets are said to be very porous. This, together with the great permeability of the spongy lead, is claimed to give cells of this construction an unusually large current capacity as well as high conductivity. The separation of the positive and negative elements is accomplished by the use of containing jars of porous earthenware made very strong for this purpose. They are further made from special material which, while highly porous and freely allowing the passage of the acid, is proof against penetration by the lead oxides. The terminals are fitted with grease boxes to prevent corrosion due to creeping of the electrlyte and are insulated in a manner that is claimed to be a positive preventive of accidental short circuiting. The claims made for the new cell are many, among them that of there being no plates to buckle and no possibility of paste falling, as well as no deposit due to disintegration, constituting self-evident advantages.

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CAR WITH THE QUEER NAME

Product of an American's Factory near Paris—Some of its Characteristics.

An addition to the list of imported cars offered for the delectation of the American buyer who is willing to invest $5,000 or more has recently arrived from the other side. Although of French origin, it has been given an American title, which, however, has a strangely foreign sound and appearance. It is termed the Viqueot, which is an abbreviated adaptation of the name of its sponsors, the Vehicle Equipment Co., of Long Island City, who have recently established a metropolitan sales-



THE 1906 VIQUEOT.

room on Forty-eighth street, just off Broadway, under the title of the Viqueot Co. This is in charge of L. S. Caswell, who was for a number of years connected with the sales department of the Electric Vehicle Co. in Hartford. In addition to the importation of the Viqueot car, the branch will handle the electric vehicles of the parent company and do a general storage business. It is comfortably housed in the three story building erected especially for this purpose.

The new car is being manufactured in the Viqueot Company's plant at Puteaux, near Paris, controlled by H. H. Havemeyer, who is vice-president and treasurer of the Vehicle Equipment Co. The car is not a new one on the other side, although a 40-45 horsepower model constitutes an innovation made for the coming season's business. Both this and the 28-32 horsepower models are now on the American market. As the cars are replicas of one another, barring the difference in size, one description will suffice for both.

The motor is of a type that embodies all those features which have come to be regarded as the highest form of current practice on the other side—that is, independently cast cylinders, of which there are four, arranged in the customary manner; oppositely disposed interchangeable valves, mechanically actuated from separate cam shafts. These are driven from a noiseless fibre pinion meshing directly with the cam gears at the forward end of the motor, the whole being semi-inclosed by an aluminum housing supported by studs extending from the crank casing. The cam shafts and cams are located in separate chambers at the side of the crank case, and the covers of the former are removable to permit of inspection. These upper halves, or covers, of the cam shaft chambers carry push rod guides, the latter being actuated by cam rollers. No sub-frame is employed, the upper half of the crank case being cast with heavy arms of II section, the ends of which lie in the channels of the main frame. The frame of the lighter car is of wood strengthened by trusses, with a third truss under the transmission, this being a rather unusual form of construction, although it has been used on other foreign cars. On the heavier car the frame is of pressed steel, the usual form of semi-elliptic suspension being employed in both instances.

The carburetter is of the usual float feed type, and is provided with a water jacket connected to the cylinder jacket circulation, but which may be controlled by means of a valve. It embodies the annular form of float that has already been adopted in more than one instance in this country and which is looked upon with much favor here. The throttle, which is located in a brass inlet pipe between the carburetter and the horizontal aluminum manifold, is of the sliding type. It is interconnected with the governor in such a manner that the action of the governor may be reduced to any extent desired by manipulating the throttle lever on the steering wheel.

High tension jump spark ignition is employed in both cars, with an Eiseman magneto as the principal standby. An entirely independent system supplied by accumulators is installed as a reserve and for starting from the seat. The distributor for the latter system is located on a vertical shaft driven from the after end of the inlet cam shaft. It is of the usual construction, and is inclosed with a plate glass cover so that its operation is visible without disturbing it. Generally accepted standards have been followed throughout in the designing of the cooling system. Features of interest, however, are to be noted in the clutch shaft, which is hollow and incases its tension spring, and in the lubricating system, which is a novelty. A reservoir attached to the motor side of the dashboard contains the supply, from which it feeds by gravity through five copper tubes to as many different points of the mechanism—three to the crank shaft and two to the cam shaft bearings, the crank pin bearings being oiled from the feed to the main bearings. From the bottom of the crank chamber the oil is elevated to the reservoir again through the medium of a small plunger pump driven from an eccentric on the exhaust cam shaft. Should gravity not prove sufficient to feed the oil fast enough the pump develops a pressure in the reservoir and facilitates its feeding.

A sliding pinion type of change speed gear controlled by a single lever supplies this essential in the transmission of the power, and is not characterized by any features differing from current practice covering this point, except in the employment of ball bearings on the change gear and countershafts. The change speed gears and differentials, as well as the bevel driving gears, are housed in the same aluminum case, resting on a three point suspension. The final step in the transmission is by means of side chains. Equalized internal expanding brakes, which are completely incased on both hubs, are provided, a novel departure in this connection being the fact that the disk shaped brake carriers are made integral with the chain tension rods. These brakes are controlled by the usual hand lever, and constitute the emergency stop, the pedal brake of the band type being located on the differential and is interconnected with the clutch, as is also the emergency brake, so that the application of either releases the clutch. The heavier car has a wheel base of 112 inches, and is fitted with 34-inch artillery wheels and Michelin tires. The price of the latter is $8,000 and of its lighter replica $5,000.

Extent of Export Trade.

During the year 1904 Great Britain imported automobiles to the value of $10,402,200, while the exports from that country amounted only to $2,000,000. On the other hand, France exported automobiles to the value of $14,260,000 and imported automobiles only to the amount of $727,000. The exports of German automobiles amounted to $3,134,000, as compared with $1,843,000 of imports. The exports of automobiles from the United States during the same period amounted to $1,997,000 and the imports to $1,446,000.

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TO TEST ENGINE EFFICIENCY

Instrument that Renders this Possible in Respect to Fine Points Usually Lightly Considered.

For the most part, the constructor of the gasolene engine of the present day, is more intent upon securing uniformity of action and general proficiency in operation, than in studying the theoretical performance of the machine. So rapidly is the state of the art advancing, however, that a close study of the phenomena of the internal combustion motor is fast becoming a necessity in order to continue its advance. This, in turn, requires the production of new forms of machinery to cope with the high rotative speeds employed, and also, in some cases, to withstand the high degrees of heat which are to be encountered.

A new device for use in the observation of the speed variations of a motor, and hence, useful as a means of studying the questions of regulation and balance, has been produced within a short time by a firm of French instrument makers. Essentially, it consists of a pilot motor of fine regulation, which is connected with the shaft of the motor under test by means of a synchronising apparatus using the principle of the differential, and capable of showing by means of a pointer an accurate comparison between the relative speeds of the two.

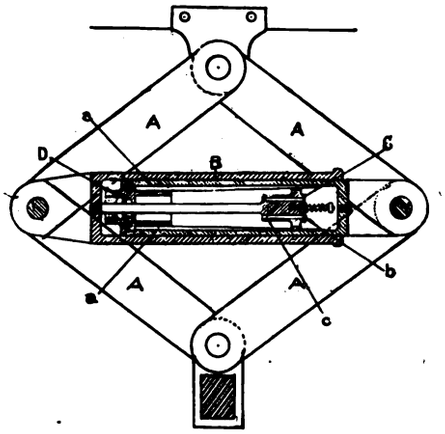
The pilot motor, which is used as a standard of comparison, is in this case a spring driven machanism which is regulated to constant speed by accurate means. Driven by it are a pair of friction discs, which are mounted on a shaft and are in action with a friction roll, the point of contact of which may be shifted at the will of the observer toward or away from the centre of the driving members, thus varying its speed. The roller is in communication with one end of a differential mechanism, to the other terminal of which the motor under test is connected. An indicator is connected with the floating member of the differential, the movement of which over a graduated arc, denotes the difference in velocity of the two elements, and also the time and rate of any fluctuations which may take place.

Thus in use, the pilot motor being set in motion, the friction drive is set for the predetermined speed at which it is desired to run the engine to be tested, and the latter is then speeded until the pointer of the differential comes to rest or begins to vibrate regularly. Afterward, knowing the speed of the pilot gear, it is possible to calculate the velocity at which the test motor is running, and also to examine pretty closely into the nature and causes of the variations in speed which are observed in the test motor.

In its present form, the apparatus is so designed that an angular advance of 1-250 of the circle on the part of the test motor over the standard speed will be revealed by a movement of 0.12 inch on the dial, while it is possible to read down to 0.02 inch on the scale. Such an instrument should be of the greatest practical value in examining the evenness of the torque of a motor, in testing motors to show in a general way the effect of balancing the parts, with an eye to the reduction of vibration as well as in the efficiency of fly-wheel regulation, and also as a convenient and ready method of calibrating governors.

"Lazy Tongs" Idea Shock Absorber.

Now that the attention of the designer has been called to the problem of checking the oscilation of the springs of the automobile consequent on passing over an obstruction in the road, the user is apparently to have ample opportunity to select the type which is most to his liking out of a long



and constantly growing list of inventions. The latest of these, which is an English product, involves the use of no new principle, being of the dash-pot type, and though not as simple as some which have been produced, is not unduly complex and should prove trustworthy and not likely to get out of order.

As outlined in the accompanying sketch, the device consists essentially of a pair of "lazy tongs" between which is mounted a cylinder fitted with a hollow plunger, within which works a piston which is affixed to the base of the cylinder. As the affair is made to work by the motion of the chassis upon the running gear, the plunger and piston work back and forth, forcing the fluid with which the device is filled backward and forward through restricted openings in the latter, thus checking the oscilation.

In detail the device consists of four members, A, which are articulated together, one pair of the joints being fixed to the chassis and axles, respectively, by means of universal joints, and the other having the elements of the dashpot attached to them. The cylinder, B, has a piston, C, connected with its base by means of a rod passing through a stuffing box in the head of the plunger, D. The latter has a pair of tapered splines, a, fixed in its wall, which fit in slots cut in the head of the piston, C. The piston is also provided with a series of outlets which are closed normally by means of a check valve, b, which is held to its seat by a spring. A projection on the piston fits rather tightly into a socket in the head of the plunger, when the device is in the position of full stroke.

In action the bouncing of the chassis causes the parts to work, the passage of the fluid through the ports in the side of the piston being restricted by the tapered splines in accordance with the position of the piston, from full opening at the extreme position to entire closure at the point where the projection on the end of the piston enters the corresponding chamber in the head of the plunger. Thus, upon the outstroke, which occurs when the chassis is rising, the fluid is practically unrestricted up to the end of the stroke, when the projecting end of the piston entering the socket in the head of the plunger acts as a cushion stop to further motion. On the instroke, on the other hand, the check valve is closed by the pressure of the fluid and hence the only outlet for that which is contained in the plunger ahead of the piston is through the openings at the side, this gradually enlarging, allows the weight of the machine to settle down upon the springs in a perfectly natural manner, but without shock.

Thus the device permits a range of considerable freedom of downward movement to the body, it checks any upward tendency, and checks it in an amount which increases in proportion to the extent of that movement.

Motor Trucks in New Fields.

Among the more recent achievements of the sales department of the Packard Motor Co. are recorded the placing of two of their trucks in lines of work in which hitherto the value of motor traction has not been recognized. The first of these machines came to New York to be used in the business of Schwartzenbach, Hüber & Co., silk merchants, and the second was placed in Chicago with the local department of the Standard Oil Co.

The latter sale was the outcome of a serious test which one of the Packard machines had made in the work and which was so satisfactory that the order was forthcoming without delay. In this test, which lasted for three days, ten trips were made in all over an average distance of seven and three-eighths miles, carrying an average load of 3,707 pounds. The average speed maintained was seven and one-half miles an hour for the entire test, the total running time being ten hours, lacking five minutes. During the three days the heaviest load carried was 4,657 pounds, and the lightest was but 400 pounds, the loads consisting of oils in barrels. The fuel consumption was 7.25 gallons in all, which figures out at 10.17 miles per gallon, while the entire quantity of oil consumed was but a third of a pint. The total cost of gasolene and oil sums up to 81 cents for the test, or five and one-half mills per ton mile—a most creditable showing.

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MOTOR CARS FOR RUSSIA

Conditions to be Met as Explained Jointly by a German and by an American Consul.

According to expert evidence published in the "Nachrichten für Handel und Industrie," Berlin, Germany, natural conditions in Russia are both favorable and unfavorable to the automobile trade. The favorable ones are found in the absence of many hills and the long distances over level stretches. The unfavorable are found in the long winters, the intense cold and the absence of romantic places or scenery to attract tourists. The people and public officials do not favor this method of getting over the ground. They are poor sportsmen. The people have little skill in handling complicated machinery, hence the inability to get chauffeurs on reasonable terms. The country folk are often bitter enemies of the automobiles, the roads of the empire are often wretched, and the network of ways far from what it might be and what it will have to be before Russia can count on a very successful industrial or commercial career.

In the cities it is different. There everything favors the automobile. The slowness with which street railways are built forces many families to keep carriages. These will doubtless turn to automobiles. The only serious obstacle to a rapid development of the automobile trade in the large cities is based on police supervision and regulation. Now that a great change has come over Russia's police and other policies trade in automobiles may develop unmolested. The different cities, however, have each its own ways of handling the automobile traffic. St. Petersburg and Moscow long since recognized the automobile as a necessity, hence their regulations are comparatively liberal. Riga and other cities have been rather severe. In those places certain streets may not be traversed by the automobiles. Applications in writing for permission to use an automobile must be made and the machine must be subjected to expert investigation.

Up to date, Russia, including Poland, the Caucasus and Finland, has from 1,200 to 1,500 automobiles of the lighter kind. Besides these there are fully 1,500 motor bicycles. Any one interested in discovering the actual conditions governing automobiles and the automobile business in Russia will do well to go over the ground carefully in every large city from St. Petersburg and Moscow down to the smallest place in which sales are to be sought. The further the empire emerges from a mere agricultural country to a position among the industrial and commercial states the automobile business is bound to grow. A long time will pass before the country will be able to build as great a network of railroads as is found in other parts of Europe or in the United States. Nor will they be as necessary, now that so convenient and pleasant a method of transportation is available. The men who own the mines and forests will want automobiles, for in the long run they will be found far superior to horses, for these latter call for great care and entail enormous expense.

Nobody has done much about building automobiles in Russia. A St. Petersburg firm that built motor boats tried its hand at the automobile. Another firm is now doing what it can to introduce the manufacture of automobiles on the basis of a well known American make, also one resembling a well known German type. During the season of 1905 this firm turned out thirty machines. The warm weather is practically the only time during which the automobiles may be run in Russia. Some firms buy all the parts abroad, limiting themselves to the work of putting them together.

The writer in Handel and Industrie, from whom most of the foregoing was taken, says the peculiar needs of Russia in regard to these machines has never been met. The comparatively great success of the American type, he thinks, was due to cheapness, abundance of supply, skilful advertising, etc. Simplicity of construction and driving are the prime requisites. The simpler the machine the better. If a machine is ever built to meet Russian ideas, it will have to be strong so as to go safely over bad roads. Great speed is not required because of the danger from bad roads. Low geared cars are wanted because of steep hills and bad places that require the machines to go slowly. The springs must be stronger and longer when possible than they usually are. They should be provided also with shock absorbers. Strong axles and crank shafts are desirable; in fact, those are practically indispensable. Only large sized pneumatic tires will be acceptable on the wheels. The space between the bottom of the body of the machine and the road must be considerable, so as to avoid shocks from obstacles. The gauge or distance between wheels must be somewhat narrow, because of the narrow, almost pathlike road over which the machines have to pass, particularly in the country. (The 4½ h. p. De Dion machine is said to be a suitable standard for Russia's roads.) It must have sprags and powerful brakes for the hills. The water tank must be easy to empty, and in a short time and to the last drop, otherwise the automobiles could not be used in Russia's winters. For the same reason the gas generator must be able to take up warm air. The machine must be as noiseless as possible. For trips into the provinces the only machines that are worth anything are those that carry a large supply of benzine and have electromagnetic ignition, for supplies may not be easily renewed and accumulators cannot be charged. The seats should be wide and comfortable, and the machine should have a top to guard against wind, mud and rain.

It is hard to find out just what sizes and prices should prevail. Russia is rich only in resources. Her available wealth is comparatively small. Her people have no huge sums as Americans and others to put into luxuries like automobiles. It is only by really recognizing actual conditions that merchants and manufacturers seeking outlets for their goods in Russia will be able to realize fair, never fabulous profits. First class goods go fairly well only in large cities like St. Petersburg and Moscow. For these fairly large prices will be paid, as there are people in those cities to whom four or five thousand dollars mean no more than to people in the large cities of the United States. One thing is possible, and for that all parties seeking sales in Russia must be prepared, viz, a demand not only for credit, but for long periods of credit. In the automobile business cash payments have prevailed in the past simply because the purchasers have been persons of great or considerable wealth. The best informed parties say that the machines that will sell best will run between $1,000 and $2,000 apiece.

The United States will have to meet French and German makers in Russia's markets. How much that means or may mean the manufacturers understand. It is the purpose of this paper, particularly at this point, to suggest lines along which the success of the past may be materially augmented. At present American makers are the favorites. This the Germans admit. A writer in the Nachrichten fur Handel und Industrie says 'the rapidly acquired popularity of the American machines,, on the Russian market only since 1903, may be regarded as only a passing episode," etc.

The French, with their elegant forms and splendid productions, winning their way to a profitable and permanent place at home and in other parts of Europe, suffer in Russia because of bad roads. Here it is that the German's solid, strong, heavily built machines have the advantage. Once the world learns that the American made machines, with their wonderful steel parts, will stand more than the heavy, clumsy creations of European rivals, increased sales are certain. The German writer already referred to urges his people to do nothing for a foreign field that will lead to the neglect of the home market, but to be sure to do nothing that will lead to the neglect of the foreign fields, for these will be profitably worked in the near future. Any attempt to find a market or to force sales in Russia during a depressed period at home must be preceded by the sale of most excellent machines in Russia in recent and immediately preceding years. No one who is wise will look for large sales in Russia now. The best basis to build on is a steady market, and that is to be secured only by the most careful study of conditions and by conforming to its demands. Care must be taken as to terms. These must be explicit, well explained and well understood. The time for delivery must be definitely held to and the forms of advertising must be as near perfect as possible. Catalogues, circular letters, etc., in any language than Russian are of little or no value. German and French are preferable to English, but all are bad.

If possible, a fairly large stock to select from should be in the large trade centres. This is true of automobiles and motor boats. Russia does little or no business based on price lists. Her people like to see, feel and

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examine what they buy. If one cannot establish a branch of his own house, he can and should put a machine or two in the hands of a reliable commission house. The successful American machines have aroused Europe. The success achieved was won by fine forms. Real success is sure if one only finds out and follows Russian needs. If one firm finds itself financially unable to carry stock, etc., two, three, four or five might combine. One firm might send a heavy or big machine, another a middle weight, a third a light weight, etc. At any rate, whatever is done the field is worth working. And what is true of Russia is true of many parts of the world. The purpose of this report is to point out the possibilities for the automobile trade in fifty parts of the world by detailing somewhat the conditions, needs, etc., of Russia. Relatively speaking, the conditions are the same. What applies there is true elsewhere.

Perhaps a better plan than the one suggested, says the American consul who transmits this information, would be for firms making agricultural implements, paints, etc., to unite with automobile manufacturers, motor boat builders, furniture makers, etc., to open large display and sales rooms in St. Petersburg, Moscow, Odessa, Riga and other points in Russia. Indeed, this policy should be carried out in all countries and in all parts of the world; for, again, what is true of Russia in this respect is just as true of the Orient, South Africa and South and Central America.

The following is a list of firms in Russia dealing in automobiles:

St. Petersburg: Automobile, Nevsky, 108; "Pobjeda," Tanski & Co., Moika, 61; Freese & Co., Ertelew Per., 10; A. M. Fokin, Troizka, Emil Braum, Kamennoostrowsky Pr.; "Polytechnik," Troizkaja; Hoffmann, Kleine Dworpanskaja, 19.

Moscow: Automobile Club, G. Schemlitschka, Mjarrnizkaja; Oktien Gesselschaft "Dux"; "Express" Neckarsulm, Banzhaf & Co.; Handelshaus Pochilsky, Twerskaja; Aktiengesellschaft "Enfield," Roshdestwenskaja; I. Block, Kusnezky Most.

Riga: A. Leutner & Co., Alexanderstr, 129.

Odessa: M. Asnach, F. Zorn &Co.; A. Reno, J. Glats & Co.

Saratof: R. Ehrt.

Warsaw: International Automobile Agency, Leschno, 25; Kowalsky & Trylski, Mjodowa, 4; Maison Ormonde, B. Wahren.

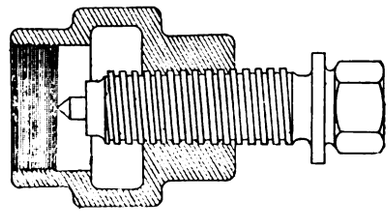
Kief: E. Torkler.
Kharkof: S. L. Popow, Usowskaja, 9.
Novorossisk: F. Burkhardt & Co.

Where the Roof is Utilized.

One of the features of a large London garage that is conducive to cleanliness on the main floor is the use of the roof for car washing purposes. The roof is of brick, well lighted and well provided with hose connections for cleaning the dozen or more cars that it accommodates and which are brought to this al fresco wash house by the "lift." It is an ingenuous utilization of space otherwise going to waste, but has the disadvantage of being subject to weather conditions.

Facilitating Removal of Tight Wheels.

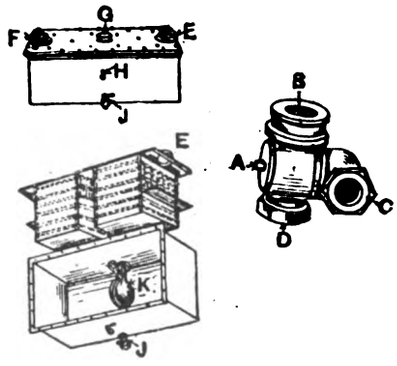
Some of the most simple operations of dismounting parts of the car are rendered difficult of accomplishment by the lack of proper appliances, and the result in many cases, particularly where the operations have been repeated any number of times, is a more or less battered appearance, due to the use of a hammer or similar tool on the metal work of the parts. None but a careless mechanic or one of deficient training would, of course, resort to the use of such a tool to



loosen a refractory part, but as the name of such gentry is legion, it is not hard to account for the many battered looking parts on used cars. One such operation is the removal of a driving wheel or wheels from the squared or key and tapered end of the live axle to which they are affixed. When they have been in place for some time this is a job that requires patience as well as care not to damage the hub or axle end. To make it an easy matter, an English concern has placed the simple tool shown in the accompanying sketch on the market. To start the wheel with this it is only necessary to remove the hub cap and substitute the tool in its place. Tightening up the set screw against the axle end soon starts the tightest wheel.

Variation of Surface Carburetter.

There has been a tendency in some quarters, and more particularly abroad, to set up a cry that first principles were too hastily discarded. The virtues of the rudimentary beginnings that long since gave way to more advanced ideas better suited to the car and its requirements, as known



to-day, are accordingly being lauded by this gentry in an attempt to revive them. Chief among these have been first principles of carburetion, such as surface and wick vaporization. A piece of apparatus designed to combine both these principles is being exploited by a German concern and is termed the "Ader Carburretter," the details of which are shown in the accompanying sketch.

This is a combination of the surface and wick types of carburetter. It consists of a brass box, which for an 8 h. p. twin-cylinder engine is about 9 inches square by 5 inches deep. At the bottom of the box a pipe is led in from the main fuel tank. The interior of the box is fitted with a needle valve and a large float. This works in the same way as an ordinary ball cock of a water cistern, and is very large and substantial as compared with the ordinary float feed of a spray carburetter. The lid of the box has attached to it, on the underside, a framework of brass, in which are inserted a number of wicks, the framework itself being divided into two portions, the central space giving room for the float to work. At each end of the head a union; to one is attached a pipe through which the main air supply is drawn, the pipe being preferably arranged with its end near to the exhaust pipe, so that the air drawn into the box is warmed. This fixed ordinary air supply coming in at one end is drawn longitudinally right through the whole of the wicks, and on its way to the engine it passes what is really a mixing valve, which can be set by hand to allow more or less pure air to mix with the carburetted air. A light spring governs a flat valve fitted on the top of this mixing chamber, the spring being regulated to give a constant mixture when the machine is sent out.

The proportion of air once set for the day by the lever on the dashboard remains fairly constant, although it may require a little alteration if the temperature varies very much. In addition to this there is a throttle which is connected up to the clutch pedal. At the moment the clutch pedal is put down, or the brake applied, the throttle closes, leaving one small orifice in the centre, through which sufficient gas is sucked to keep the engine running without racing. The carburetter is fitted with a tap at the bottom to entirely empty it if it is found necessary to clean the wicks. There is also another tap fixed at a point where the level of the fuel should be maintained, so that the float can be tested without taking off the lid of the box.

Object of De Caters's Offer.

As though the needs of the car were not sufficient in themselves as an incentive to motor car designers to develop the most perfect machine possible, several worthy motorists have recently taken it upon themselves to offer prizes for the strengthening of this or that quality which they deem to be most important in the construction of the automobile. The most recent of these is a $1,000 challenge cup which has been offered by Baron De Caters to be annually awarded to the maker producing the most accessible motor. The idea is to stimulate the simplification of the machine and also the ease with which disordered parts may be got at on the road.

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Features of the Well Tested New Haynes Car.



JOHN HAYNES AFTER REACHING NEW YORK IN THE 1906 HAYNES CAR.

"Haynes, Model R," is the official title of the 1906 top notch representative of the line of the Haynes Automobile Co., of Kokomo, Ind. As already refered to in these columns, a model of this car has been on an extensive demonstrating tour, in the course of which it covered 6,500 miles before returning to its home town. The engine and all running gear were immediately dismounted for examination, and found not to show the slightest signs of wear.

The engine, which is hung directly from the main frame of the car by arms cast integral with the upper half of crank case, has independently cast cylinders, the dimensions of which are 5⅛x6 inches, and is rated at 50 horsepower. By this arrangement it is unnecessary to disturb the cylinders or their connections in order to make adjustments or replacements of internal parts, as the removal of the lower half of the crank case exposes all parts. Water jackets are cast integral with the cylinders, unusually liberal provision being made for circulating water about the exhaust valves. All valves are mechanically operated, and, in accordance with approved practice, are located on opposite sides of the cylinder. The pistons are grooved up to the lower ring for oil, and are fitted with three triplicate and one retaining compression ring. The end bearings of the nickel steel crank shaft are of the roller type, all others in the engine being of white bronze, the total bearing surface of the crank shaft aggregating nineteen inches. A mechanical force feed oiler, with an individual pump for each pipe, takes care of the piston lubrication, while an auxiliary pump maintains the supply in the engine base, splash lubrication oiling all other moving parts in the motor.

Jump spark ignition, with an option of dry cells or accumulators, operating through a Lacoste distributer, forms this essential, although a magneto will also be fitted if desired. The carburetter is of the water jacketed type, embodying the latest advances in design made here and abroad, and is the product of the home factory. A honeycomb radiator with a tremendous amount of cooling surface, supplemented by a fan immediately behind, as well as another represented by the spokes of the flywheel, comprises the constituent parts of the cooling system, circulation of the water being guaranteed by the use of a gear driven force feed pump, which is capable of throwing a stream forty feet from the end of a garden hose. The power plant is entirely protected from beneath by the use of a sheet steel dustpan extending from the radiator rearward underneath the transmission case.

The clutch is an extremely simple device, consisting of a ten-inch drum keyed to the end of the crank shaft, around the face of which is a heavy steel band keyed by its hub to the transmission shaft. When running idle the drum revolves freely inside this band. In action the band is constricted on the face of the drum by means of a lever and cam operated by foot pedal, a second pedal operating both clutch and brake. The emergency brake lever also disengages the clutch. Some of the features of the change speed box are the use of chrome steel gears of large face and coarse pitch; reverse pinion in mesh only when in use, and roller bearings on the main and counter shafts, which are of nickel steel. By means of a patented device exclusive to this car it is possible to change from low to intermediate or high speed without releasing the clutch and without the danger of stripping the gears. The transmission is by a 1¼-inch special steel propeller shaft provided with universal joints at each end.

Both the rear axle and driving mechanism construction are of interest, the former being a one-piece live axle of nickel steel, extending through both wheels and bearing one member of the differential. One wheel is keyed direct to the axle, and the other is keyed to a sleeve carrying the other half of the differential, and is slipped over the opposite end of the axle and held in place by a retaining nut. Over all is fitted a steel housing carrying four sets of Hyatt roller bearings. The spring saddles are integral with this housing, which likewise covers the driving mechanism. The latter is of the familiar Haynes sprocket and roller pinion construction. A bevelled sprocket gear is attached to the axle sleeve and driven by a pinion keyed to the driving shaft. In this pinion rollers take the place of teeth, making in effect a roller chain. The whole revolves in a bath of oil. The front axle, which is a one-piece forging, also carries the spring saddles.

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BUCKBOARD MADE UP-TO-DATE

Popular Priced Orient Altered in Appearance and in Important Details—What They Are.

In preparing the Orient buckboard for the new season, the Waltham Mfg. Co. have taken pains to add a sufficient number of novel and important features to make the little machine worthy the attention and respect of the public as an up-to-date product, without in any way taking from it its reputation for lightness, low cost and general handiness. In fact, although it is still very much a buckboard, and thoroughly characteristic of its type, it is now furnished with all that goes to make up a "full grown" automobile, even to the point of a variable speed transmission. It is a 600-pound car at the poor man's price, yet suitable for any sort of general knockabout work in the fields of business and pleasure.

As heretofore, the motor is placed vertically at the rear of the machine, and is air-cooled. The dimensions are 3¼ by 4¼ inches, and the rated output is placed at 4-horsepower. As an aid to the cooling action of the radial ribs on the cylinder, a triple bladed fan is mounted at the front, driven by a belt from the crank shaft. An Orient carburetter is used, which is fed from a three and one-half gallon tank, giving the machine a running radius of some thirty miles on one charge. The oiling is accomplished by a sight-feed mechanism which is controlled from the seat. Ignition is by the jump spark system, energy being supplied by a four-cell dry battery, while the distribution is effected in a wipe contact commutator of foreign pattern.

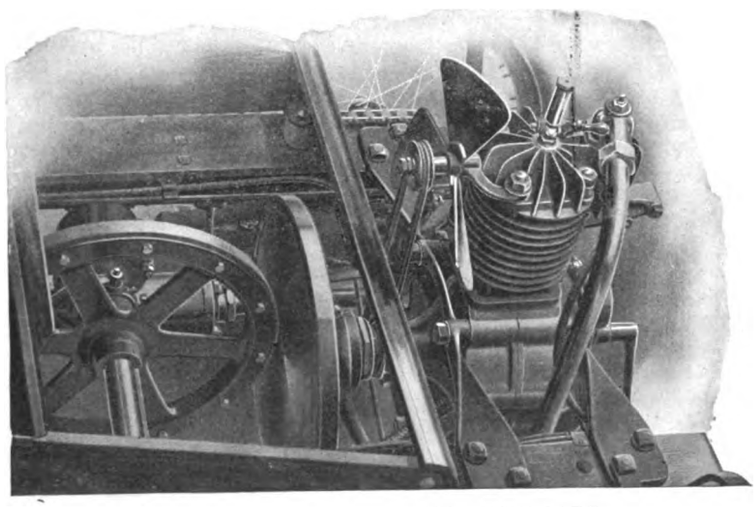
The transmission gearing is of the simple friction disc order, a metal disc being fixed to the crank shaft of the motor and driving a fibroid wheel which is slidably mounted upon a jack shaft having a driving sprocket up on either end, which communicates the motion by chains to the rear wheels. The position of the driving wheel is regulated by means of a ratchet foot lever at the driver's right, which premits of a somewhat flexible controller, while allowing of absolutely positive action when hill climbing. Thus the speed variations may be obtained in a perfectly simple manner and one which is thoroughly within the range of comprehension of the novice.



1906 ORIENT BUCKBOARD.

The mounting of the car has been altered in the new model to give it an appearance more in keeping with the average machine than has been that of its predecessors, a duck back being placed over the transmission at the rear of the seat, and a small hood, being placed at the front, which affords a place for storage. The suspension is by 19-inch eliptical springs, which carry the motor as well as the body, thereby doing away with much of the vibration which has been noticeable in former models, and rendering the riding qualities fully up to the best standards. The wire wheels are 26 inches in diameter, and are fitted with 2½ inch single tube tires. The tread is 42 inches, with a purchaser's option of 56 inches subject to a time order. The wheel base is 80 inches.

As regularly equipped, the buckboard is capable of making a speed of thirty miles an hour under favorable conditions, but a larger front sprocket may be placed on the driving shaft, increasing the rate of travel by a considerable amount. The record of 121 miles in six and three-quarter hours, which the little car recently made, consuming in that time but four gallons of gasolene and one and three-quarter pints of oil, together with an even better showing which it made subsequently on the following day, shows something of its capabilities when taken in conjunction with its complete ascent of "Old Boston Rock," up which no automobile had ever before been able to climb.



"POWER PLANT" OF ORIENT BUCKBOARD.

Details of the New Model!

Occasionally the automobile columns of the non-technical papers, always productive of much distorted information, secure combinations which are highly amusing to the reader. Thus, a somewhat "horsey" publication prints in a paragraph directly following a des ription of an all aluminum body the following, which apparently refers to the same superstructure:

"A double floor is used to overcome the vibrations incident to a gasolene engine. The top floor can be removed easily, and doors in the lower floor give free access to the machinery beneath. Between the two floors are carried a folding casket and a folding stretcher, which push in entirely out of sight when not in use."

From which the lay reader would infer that provision was made for caring for the injured in the proverbially frequent accident, though, as a matter of fact, the quotation referred to a special form of ambulance which was recently constructed for a local undertaker.

Test of Lubricating Oil.

The following is an easy method of testing lubricating oil for the presence or otherwise of at least two of the qualities it should not possess: The oil should be neither acid nor tacky. Consequently, if a drop of it is placed upon a polished copper plate it should remain clear and keep its color for several days. If there is acid present it will turn green, and if it becomes tacky it shows that the oil dries too rapidly. In either case it should be rejected as being unsuitable for lubricating purposes. This is, of course, merely a rough and ready method, and cannot replace tests to ascertain the degree of acidity and dryness.

For Filling in Body Bruises.

A good receipt for filling in deep bruises and cavities in car bodies is the following from the Carriage Monthly: "Make a putty consisting of three parts of bolted whiting and one part of white lead, mixed with equal parts of pale drying japan and raw linseed oil. Into the mass stir a quantity of plush woof or velvet pickings. If the hole to be filled is unusually deep, drive two or three tacks into the bottom of it. Fill in with the putty, slashing across the top of the mixture to promote drying, and as the filler dries fill the depressions with regular putty.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau Street, New York.

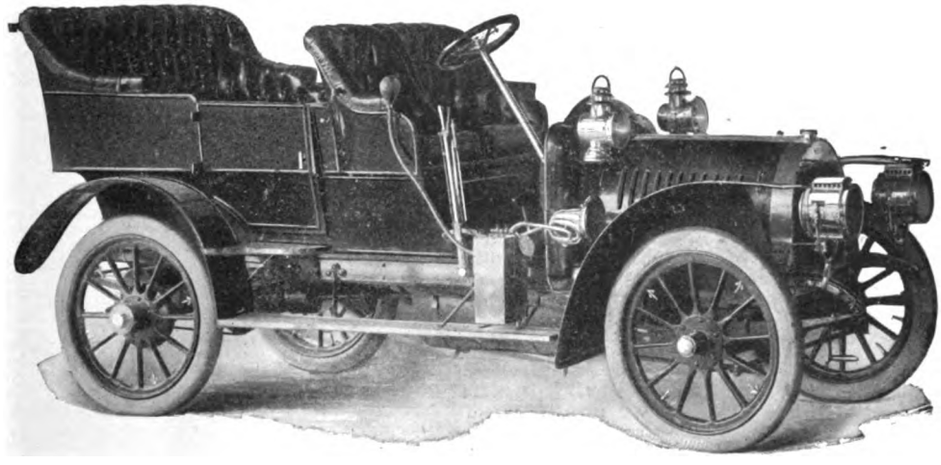
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THE 1906 MODEL B

Rainier

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CARBURETTER FOR KEROSENE

Here's a French Device Claimed More Powerful and Economical than Gasolene Gasifiers.

Considerable interest attaches to the problem offered by the designing of a perfected carburetter for the use of what are usually known as "heavy oils," but which in the majority of instances is taken to mean kerosene. In view of the fact that the average motor designed for gasolene will work without any difficulty or modification of the carburetter when kerosene is employed, provided the latter is supplied while the engine is warm, the numerous attempts to design apparatus for this purpose which have resulted in the creation of complicated contrivances involving the use of chemicals would appear to be abortive—that is, waiving all questions of comparative efficiency. There have been various systems of kerosene vaporizers introduced which are in large part based upon principles of chemical dissociation, whereby the more refractory by-products undergo a chemical conversion into gas. Although the results attained are good, the apparatus involved is in the majority of instances so complicated that few of them have ever been put to practical use, except for marine engines.

There is another large class which has started with the principles of carburetion evolved through long study in the use of gasolene, and has so far as possible adopted them in designing apparatus to use the heavier and less easily vaporized oil. Kerosene is not only far less volatile, but its flash point is vastly higher than the lighter hydrocarbons. Accordingly not alone a higher temperature is necessary to vaporize it, but a greater degree of mechanical mixing is required to thoroughly break up the liquid and incorporate it with the proper amount of air. But aside from the additional parts involved in this construction, as well as the increased size of the mixing chamber made necessary, the carburetter to use kerosene is found not to differ in its essentials from those which have proved most successful for lighter fuels. Nevertheless, those who pin their faith to the principles of chemical dissociation are not deterred from following out their theories to legitimate ends, and now a French investigator has invented a type of apparatus which belongs to neither of these schools, but may most correctly be classed as something between them. It is much simpler than the creations of the first class, but not on a par in this respect with those of the second.

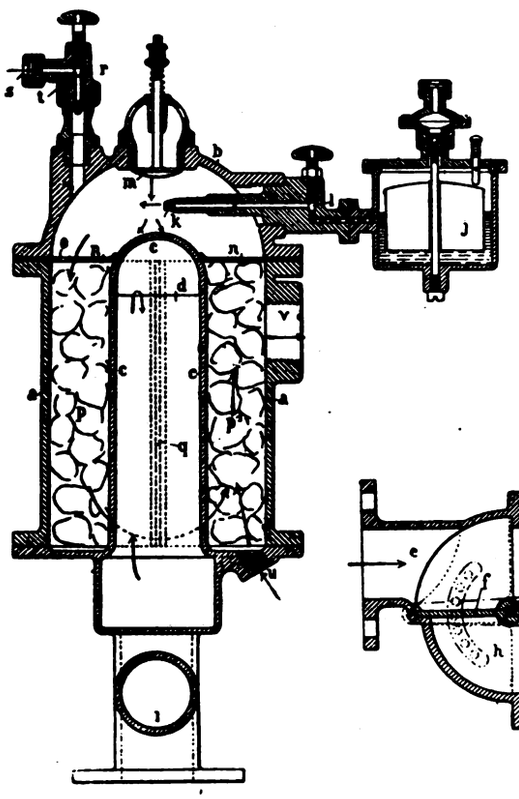


Fig. 1.

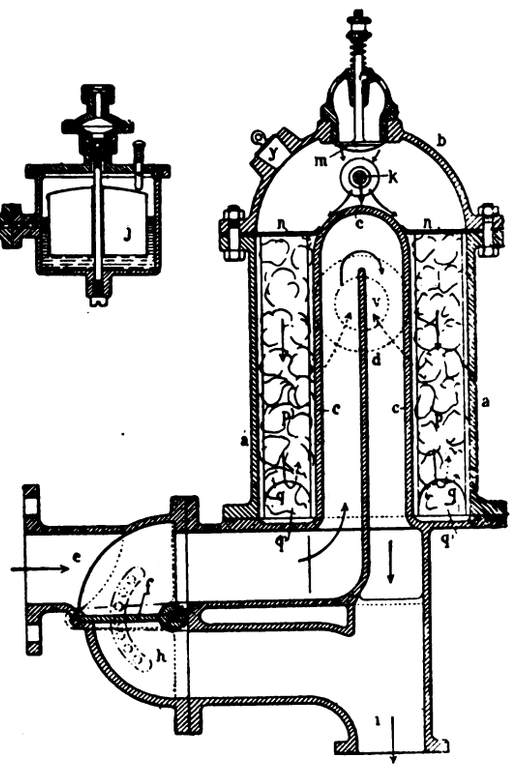


Fig. 2.

Its creator is M. Breuillard, a French chemist, who is said to have devoted considerable attention to research along this line. He has ascertained that kerosene can be transformed into a perfectly homogeneous gas at about 575 degrees Fahrenheit, leaving no by-products, and has embodied his principles of accomplishing this in what he terms the "integral vaporizer." To secure this result the kerosene has to be finely pulverized and then passed through hot coke, where the vaporizing process is continued until it leaves in the form of a homogeneous gas mixed with the desired proportion of air.

The vaporizer is composed of a cylinder, A, with a cover, B, and inside is a concentric tube, C, closed at its upper end. The space between the inside tube and the cylinder is packed with ordinary gas coke, and above is a circular plate, N, separating the coke from the space above, except for the aperture, O, opposite to the induction pipe, V, where the gas enters the engine. The operation is as follows: On the cover is a gasolene injector, R, connecting with a small gasolene supply which may be conveniently fitted to the vaporizer itself. To start the engine a turn is given to the needle valve, T (Fig. 1), when the gasolene drops on to the coke through O and the vapor is drawn up with the desired proportion of air through the pipe U. As soon as the engine starts running the exhaust enters the base of the vaporizer and passes directly up over the partition, D, and leaves by the exhaust pipe, I. In seven or eight minutes the coke is sufficiently hot for running with kerosene. The gasolene supply is then cut off. At the opposite side of the cover is the kerosene constant level chamber with the spray nozzle extending over the dome of the inner tube and beneath the air valve, M. The needle valve, L, is now opened, and under the influence of the suctional stroke the air valve, M, descends, allowing a rush of air on the kerosene spray, which is projected down over the hot dome of the concentric tube. The kerosene is now in the form of a heavy gas with globules of liquid. It is drawn down by O through the hot coke, and on reaching the bottom passes through holes in the separation, Q, when it mixes with the air coming through the pipe U. This aperture also serves to draw off any liquid that may not have been vaporized in the coke. In the process of rising through the coke in the second compartment the gas and air are thoroughly mixed by the time they reach the induction pipe, V. The temperature of the apparatus can be varied at will by a valve, F (Fig. 2), which regulates the quantity of gas passing up over the division inside the concentric tube.

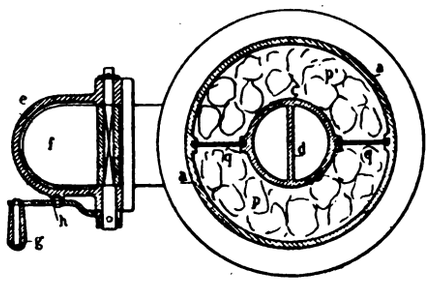
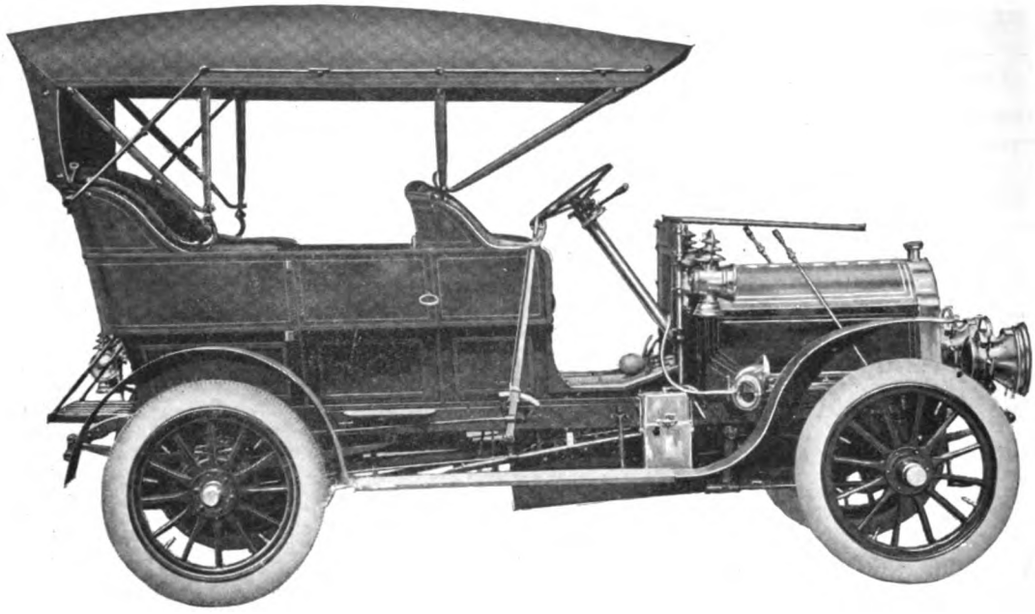


Fig. 3.

It can easily be imagined that with such a system the gas is always of a uniform quality, whatever may be the load under which the engine is running. The coke, moreover, serves as a reservoir from which gas will continue to be drawn for some time, even after the supply of kerosene has been cut off, and there can consequently be no change in the quality of the mixture under varying loads. It may also be assumed that, supposing the fuel should not be entirely vaporized in the way claimed, the coke would still serve the useful purpose of collecting any non-volatile by-products and purifying the vapor, so that the homogeneity of the gas is doubly insured. The apparatus can be used not only for kerosene, but also for alcohol and heavy oils, with which it is claimed to run very satisfactorily. One of these vaporizers has been running on an industrial engine for six months past, during which time it has been shown that there is an economy of 10 to 15 per cent in favor of kerosene as compared with gasolene in the ordinary spray carburetters, while it is also stated that there is an appreciable increase in the power developed by the engine.

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Louisville,	The Zorn-Strauss Co., Inc.
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Ottawa & Montreal,	Wilson & Co., 142 Bank Street.
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1905 MARION, 4 cylinders, detachable tonneau; seats 5; Fisk tires; list, $1,500; fine condition; immediate delivery, $1,000. F. S NEWCOMB, New London, Conn.

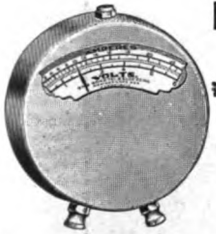
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The Week's Patents.

805,243. Spring-Tire for Wheels. Richard Stone, Wellington, England. Filed February 18, 1905. Serial No. 246,269.

Claim.—1. In spring-tires for wheels, the combination with a tread provided at its bottom with an annular buffer-flange, plates secured on the sides of said tread and having lateral projections, side flange-plates bolted to the felly and having overhanging flanges adapted to engage over said buffer-flanges and provided with recesses for receiving said projections, and an endless flexible spring-band surrounding the felly at a distance therefrom and normally engaging the under side of said tread.

805,274. Steering Device for Motor-Vehicles. John W. Eisenhuth, Brooklyn, N. Y., assignor to the Eisenhuth Horseless Vehicle Company, a Corporation of Maine. Filed May 25, 1905. Serial No. 262,303.

Claim.—1. A running-gear for vehicles comprising a suitable frame, guiding-wheels pivotally secured thereon having comparatively large non-revoluble web portions, yokes rigidly secured directly to the said webs, and means for moving the said yokes for moving the wheels in one direction or the other for directing the movements of the vehicle, the yoke affording a strong leverage on said wheels, substantially as described.

805,318. Apparatus for Portable Sleighs. Alanson K. Ramsdell, Old Orchard, Me. Filed May 5, 1905. Serial No. 259,075.

Claim.—1. A motor-sleigh comprising, in combination with the bobs, a platform connecting the same, a driving-wheel, a pivotally-mounted rack on which said wheel is mounted, springs secured to the platform of the sleigh and bearing against the rack carrying said driving-wheel, a shaft mounted upon the platform, chains adapted to wind upon said shaft passing over suitable pulleys and connected with said rack, and means for rotating said shaft, as set forth.

805,392. Speed-Governor. Henry E. Warren, Newton, Mass., assignor to The Lombard Governor Company, Ashland, Mass., a Corporation of New Jersey. Filed March 22, 1905. Serial No. 251,419.

Claim.—1. In a speed-governor for motors, a centrifugal element which rotates at a fixed ratio of the speed which it controls, an inertia element which tends to rotate at a constant speed and centrifugally-controlled means which interconnect the centrifugal and inertia elements and tend to cause such elements to rotate synchronously.

805,430. Means to Regulate the Power of Explosion-Engines. Adolf Vogt, West Norwood, England. Original application filed January 9, 1902, Serial No. 89,072. Divided and this application filed December 16, 1903. Serial No. 185,379.

Claim.—1. In a two-stroke cycle internal-combustion motor, a cylinder having its front closed and acting as a pump for drawing in combustible charges through a suction-valve, an outlet-valve at said front end communicating by a pipe and connected reservoir to an inlet-valve at the back end of the cylinder, cams controlling said valves so as to cause them to allow a charge drawn into the front end of the cylinder to pass through said pipe into the back end of the cylinder, a governor controlling said cams adapted to bring these into position for hold-

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ing the said outlet and inlet valves open during the first part of the compression-stroke of the piston, when the normal speed is exceeded, whereby a portion of the charge admitted at the back end of the cylinder will pass back into the front end again, substantially as and for the purpose described.

804,953. Universal Joint. Patrick L. Hussey, Cleveland, Ohio. Filed July 10, 1905. Serial No. 269,060.

Claim.—1 In a universal joint the combination of two joint members having forked ends arranged to be disposed at an angle to each other, a bearing-carrying member arranged to incase said joint members, said bearing-carrying member having an opening at each end so that each joint member may be mounted in the said bearing-carrying member by introducing one of the fork members thereof into the bearing member and allowing said fork member to travel past its normal position and then introudcing the other member of the fork into the casing and means for centralizing each joint member in the bearing-carrying member.

804,954. Bearing for vehicles. Eric Johanson and Charles Johanson, Dillmanstown, Kumara, New Zealand. Filed July 2, 1904. Serial No. 215,160.

Claim.—For the purpose indicated, in combination, a wheel-hub having its ends bored conically, an axle passing into the hub, a socket having a race and fitting the axle and engaging a portion square in section of the axle, a socket having a race and fitting the end of the axle being screwed thereon, a nut on the axle to retain said socket in position, there being square bosses upon the sockets, other sockets having races and having holes engaging the bosses, washers upon the sockets, balls within the races, there being rims upon the sockets and washers for retaining the washers on the sockets, as set forth.

804,955. Steering-Wheel. John W. Johnson, Kokomo, Ind. Filed December 16, 1904. Serial No. 237,167.

Claim.—A wheel having a pitted rim, and a sheet or envelope of hard rubber permanently vulcanized upon the rim and anchored in position by the pits.

804,971. Lever Mechanism for Motor-Vehicles. James W. Packard and William A. Hatcher, Warren, Ohio, assignors to Packard Motor Car Company, Warren Ohio, a Corporation of West Virginia. Filed November 14, 1902. Serial No. 131,327.

Claim.—1. In a motor-vehicle, having relatively movable speed-changing and reversing gears adapted to vary the speed and direction of the vehicle, a hand-lever, two arms for shifting different sets of said gearing arranged adjacent to said lever, and means mounted on said lever and adapted to connect said lever with either of said arms.

805,046. Spring-Tire. Troy Ware, Letch, W. Va. Filed March 30, 1904. Serial No. 200,692.

Claim.—A spring-tire for a wheel, the same comprising a band of metal adapted to be fitted snugly over the rim of a wheel, and spring metal strips spaced equally about the band with their free ends bent at an angle to their length and terminating in spring portions concentric with the band and parallel with the rim of the wheel, the other ends having a long bearing upon the band and formed with integral tongues extending in opposite directions with their backs or connecting portions adjacent each other, and the tongues extended through openings in the band opposite the slots formed by the striking up of said tongues in the strips, and bent in opposite directions and clenched upon the inner face of the band, each strip having a bearing against the band upon each side of the tongues.

805,111. Automobile-Cyclometer. Jesse Alexander, Brooklyn, N. Y., assignor to Kittie Alexander. Filed October 17, 1903. Renewed May 23, 1905. Serial No. 261,850.

Claim.—1. A registering mechanism comprising, two series of registering-drums, a series of connecting-gears for each of said series, a shaft for each of said series of gears, a spring connecting said shafts and means for manually retracting said shafts to withdraw the gears from engagement with the registering-drums.

805,138. Carburetter. William Herrick and John G. Lohrman, Elkhart, Ind. Filed October 26, 1904. Serial No. 230,092.

Claim.—A gas-producing machine comprising a hydrocarbon and an air tank, a generator having a weighted foot, a seat formed within the generator, a grid located on the seat, a foraminous member on the grid, an absorbent pad resting upon the foraminous member, a communication extending from the air-tank to a point below the grid, a communication extending from the hydrocarbon-tank to a point above the pad, a conical cover on the generator, a gas-receiver, and a pipe leading from the apex of the cover to the receiver.

805,194. Lamp or Headlight for Vehicles. Emil C. Geissberger, New York, N. Y., assignor of one-half to A. T. Demarest & Co., New York, N. Y. Filed July 13, 1905. Serial No. 269,481.

Claim.—1. In an automobile or similar vehicle, embodying a rotatable block and a stub axle for each of the forward propelling-wheels thereof, a crank-arm rotatably mounted upon a suitable part of the vehicle, a lamp or headlight supported thereby, an arm having rigid connection with said rotatable block, and a link movably connecting said arm and said crank-arm.

805,434. Vehicle Tire. Lemuel E. Allen and William J. Potser, Canton, Ohio. Filed May 11, 1905. Serial No. 260,020.

Claim.—1. In a tire for vehicles of the class described a series of chambers formed in the tire, said chambers separated by radial partitions, integral members located through the chambers and between the radial partitions, said integral members extended parallel with the felly upon which the tire is mounted, substantially as and for the purpose specified.

805,442. Automobile Engine Suspension. Fred H. Bogart, New Britain, Conn., assignor to The Corbin Motor Vehic.e Corporation, New Britain, Conn., a corporation of Connecticut. Filed April 4 1905. Serial No. 253,817.

Claim.—1. In an automobile, a support for an engine and transmission mechanism comprising a continuous frame or base for said engine and transmission, said base being supported at or near its forward and rear ends in a line substantially parallel with the sills of the vehicle, and an intermediate support between the aforesaid supports and arranged at substantially right angles thereto.

805,474. Means for Inflating Rubber Tires. Alfonso G. Lavertine and James E. McNellan, Johannesburg, Transvaal. Filed March 6, 1905. Serial No. 248,632.

Claim.—1. In an apparatus for inflating rubber tires by means of a cartridge containing compressed air or gas, means for releasing air or gas and conducting it to the tire to be inflated, said means comprising a

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needle adapted to perforate the cartridge to release the air or gas and a valve through which the air or gas may pass to the tire to be inflated, means for raising said valve and causing the needle to perforate the cartridge, and means whereby the valve is closed when the means which serve for opening it are released, to allow a portion only of the contents of the cartridge to be utilized.

805,484. Power Transmitting Apparatus. Carlton R. Radcliffe, New York, N. Y. Filed January 17, 1903. Renewed May 27, 1905. Serial No. 262,681.

Claim.—1. In an apparatus of the character described, a driving member and a driven member, intermediate mechanism comprising a shaft, a gear and a clutch supported thereby, the latter being adapted to be connected with or freed from the driving member, gears revolubly mounted on said shaft, a gear case, gears of different ratios supported by said case, one of the same meshing with the gear on the aforesaid shaft, the others meshing with the gears revolubly mounted on said shaft, a clutch operatively connected with one of the latter gears, the other of said gears being connected with the driven member, and means for controlling certain members of the intermediate mechanism to produce changes in the speed of the driven part relatively to the driving part.

805,504. Friction Drive Speed Gear. Walter E. Trufant, Whitman, Mass. Filed April 25, 1904. Serial No. 204,682.

Claim.—1. In an apparatus of the kind described the combination of a power shaft, a disk receiving power from said power shaft, a driving shaft, an idler gear carried by said driving shaft, two rolls mounted on the driving shaft, means for controlling the frictional contact between the rolls and disk, gears carried by said rolls which mesh with said idler, means for moving one of the rolls along the face of the disk, means for disconnecting the power shat rom said disk, and means for connecting the power shaft and the driving shaft together.

805,528. Vehicle Wheel. Eugenio Cantono, Rome, Italy. Filed January 30, 1905. Serial No. 243,345.

Claim.—1. In a vehicle wheel the combination of a tire comprising a rope tread, one end of which is fixed and the others free, and a take-up device to which the free end of said rope is attached.

805,550. Friction Clutch. Harry W. Hill, Cleveland, Ohio. Filed March 15, 1905. Serial No. 250,221.

Claim.—1. In a friction clutch, the combination of the clutch frame, a pair of inversely and radially movable jaws mounted thereon, a rocker having a radially adjustable fulcrum pivot by which the rocker is connected with said frame, pivot connecting said rocker to one of the jaws, and a radially adjustable pivot connecting the other jaw with said rocker on opposite side of the said fulcrum pivot, and means for operating said rocker.

805,562. Valve Gear Mechanism. Frederick Lamplough, Willesden, England. Filed March 22, 1905. Serial No. 251,452.

Claim.—In mechanism for operating the valves of steam and gas engines and the like, the combination of a screw-toothed wheel fixed on the engine crank-shaft, a screw-toothed wheel of contrary direction to the above fixed on the shaft carrying the valve-cranks, eccentrics, a pair of right and left-handed screw-toothed wheels fixed and rotating together, on a counter-shaft, one of such wheels gearing with the wheel on the engine crank shaft and the other with the wheel on the shaft carrying the valve cranks, eccentrics, and means for moving said conical pair of right and left handed screw-toothed wheels endwise, substantially as herein shown and described.

805,567. Driving Axle Structure for Automobiles. Thomas J. Lindsay, Indianapolis, Ind., assignor of one-half to Willard Harmon, Indianapolis, Ind. Filed March 13, 1905. Serial No. 249,926.

Claim.—1. In a driving axle structure for automobiles, the combination of a hollow axle structure, a pair of shaft sections ends separated, a compensating gear structure journaled in the axle structure between the adjacent ends of the shaft sections, and driving connections between the said shaft sections and compensating gear permitting transverse withdrawal of the compensating gear without axial movement of the shaft sections.

805,591. Non-Puncturable Tire. Luther A. Davison and James M. Logan, Hartford, Conn. Filed June 8, 1905. Serial No. 264,276.

Claim.—1. In a non-puncturable tire the combination of an exterior cover provided with an interior chamber, a series of cylindrical cork sections compactly placed within the interior chamber, rubber plugs, forming the end sections and vulcanized together and to the tire.

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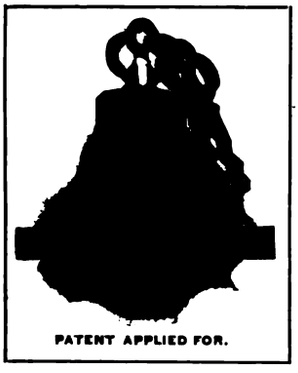
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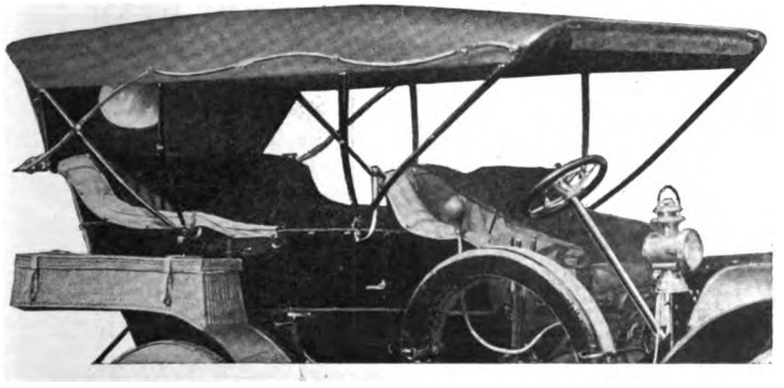
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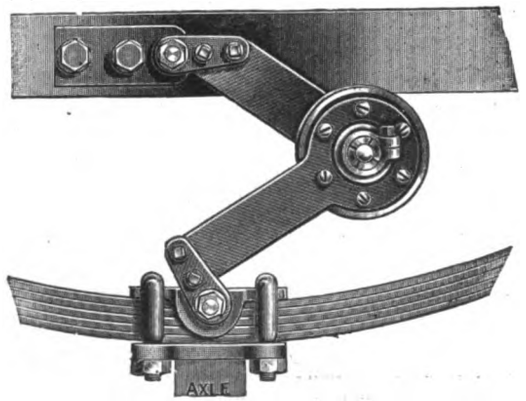


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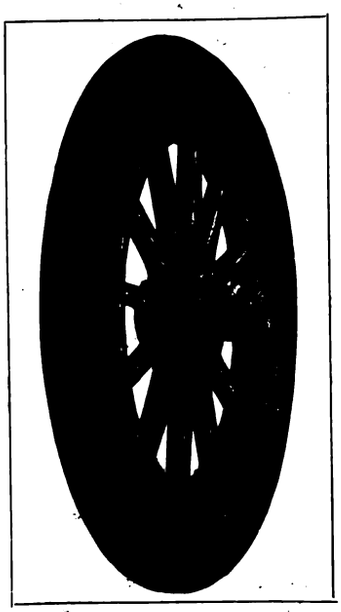
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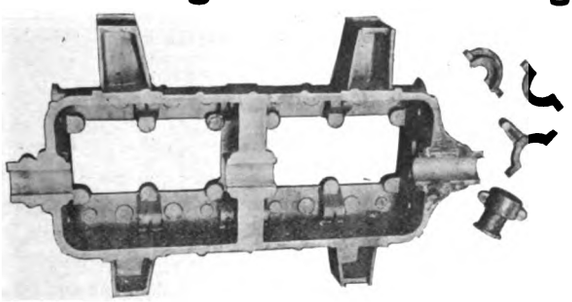


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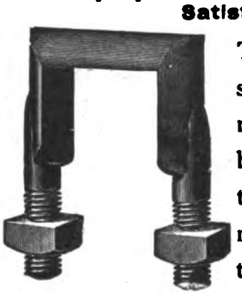


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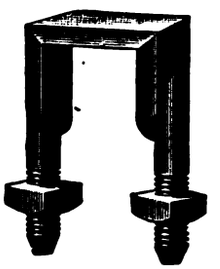
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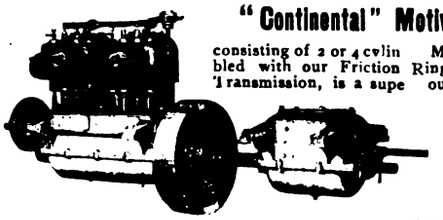
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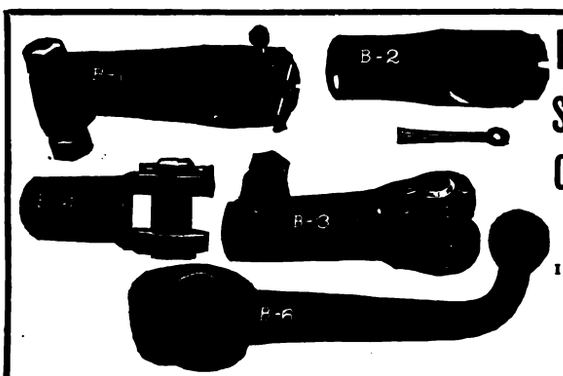
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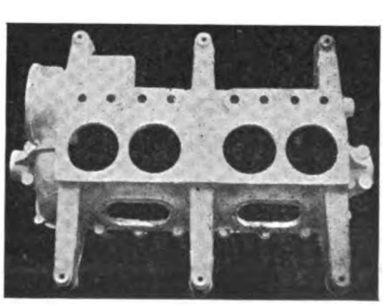
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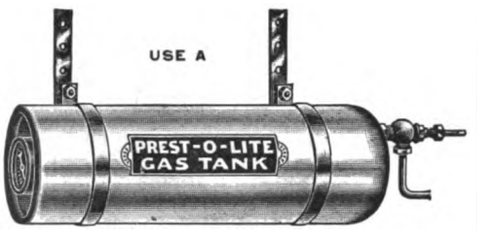
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In the South, Manufacturers of all kinds are in position to Assemble their Raw Materials Cheaply, while Exceptional Transportation Facilities place them in touch with all the Great Markets, North, East and West.

THE SOUTHERN RAILWAY

Traverses Sections of the South which are growing faster than any other part of the United States.

If looking for a location, or an investment, write

M. V. RICHARDS, Land and Industrial Agent,
Southern Railway Company, Washington, D. C.
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THE SOLVAY PROCESS COMPANY'S
"KAL-KRYSTAL."

MAKES THE BEST NON-FREEZING SOLUTION FOR AUTOMOBILE USE.

Neutral and Non-Corrosive—Stands 50° below zero Fahr. Put up in 10-lb. cans, makes 2 gallons of solution ready for use.

For sale at all Automobile Supply Houses.

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THE MARION MOTOR OAR

SIMPLY BUILT. SIMPLY RUN.

PRICE, $1500.

Air cooled. 16 horse power developed. Beautiful in design and finish. Easy riding. Speedy. Durable and dependable. We build it.

MARION MOTOR CAR CO., INDIANAPOLIS, IND

Our interesting catalogue yours for the asking.

BALDWIN CHAINS AND SPROCKETS

The Baldwin Chain Company
— MAKE —
Automobile Chains, Sprockets, Spur and Bevel Gears.
—
Baldwin Chain & Mfg. Co.,
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All Kinds All Sizes
Prices Right
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SPRAGUE UMBRELLA CO., Norwalk, Ohi



The Jones Combination
SPEEDOMETER - ODOMETER
(1906 Model)

not only shows the **speed** of your car and registers the Season mileage up to 10,000 miles, but has a three figure "Trip" attachment which registers the mileage up to 100 miles. A touch of the button instantly resets the "Trip" column to zero.

In both the Season and "Trip" registers, the miles are shown in plain black figures and tenths of miles in red.

AN ADJUSTABLE SHAFT CONNECTION permits of passing the Shaft through the floor; through, or around either end of the dash.

THE DASH BRACKET occupies a very small space on the dash board and is **adjustable** to permit of the instruments being set at any angle desired.

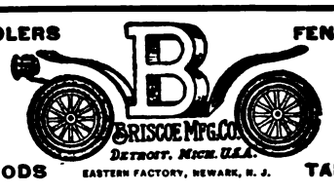
Speed is indicated and mileage cumulatively recorded whether the car go forward or backward.

Full description of our 1906 combination Speedometer-Odometer and all other instruments will appear in our new catalog now in course of construction, is to be the most artistic catalog ever compiled for an automobile accessory.

JONES SPEEDOMETER,
132 West 32nd Street, New York.



COOLERS FENDERS



HOODS EASTERN FACTORY, NEWARK, N. J. TANKS



STA-RITE "STAYS RIGHT THE LONGEST."

DEALERS

Condense Your Orders and buy "Sta-Rite" ignition plugs. We have plugs for every possible need. 47 sizes. Porcelain **$1.50;** Mica, **$1.75.** Advise name of car and secure style best adapted. It makes a great difference.

THE R. E. HARDY CO.
225 West Broadway NEW YORK CITY

THE MOTOR WORLD PUBLISHING COMPANY,
154 Nassau Street, New York.

Enclosed find $2.00 for which enter my subscription to

The Motor World

for one year, commencing with the issue of_____

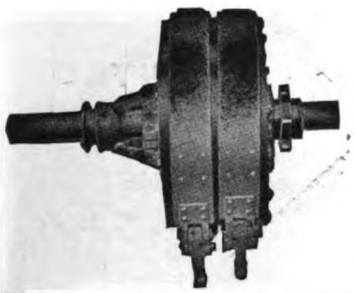
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INDIVIDUAL CLUTCH.
Two Speeds and Reverse.



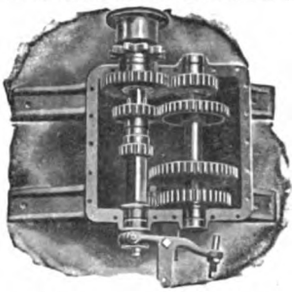
WHAT IS MORE IMPORTANT THAN THE
TRANSMISSION GEARS?

What is more important than selecting the right one? We are specialists in that line. We have the know-how, the facilities and the prices.

Why Cannot We "Reason Together?"

SYRACUSE GEAR CO., - Syracuse, N. Y.

SLIDE GEAR.
Direct Drive. Three Speeds and Reverse



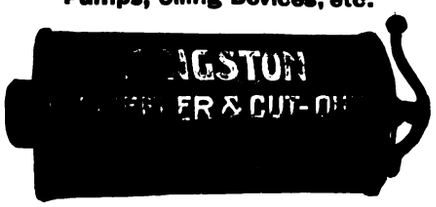
Kingston Carburetor.

OVER 30,000 IN USE.

Patented May 12, 1903. Other Patents Pending.



KINGSTON
Carburetors, Mufflers, Spark-Coils, Spark-Plugs, Steering Wheels, Pumps, Oiling Devices, etc.



BYRNE, KINGSTON & CO., Kokomo, Ind., U. S. A.

Pat. Jan. 29, 1901.



TRADE GRADOMETER MARK.

An instrument that will enable you to determine the grade per cent. you are ascending or descending.

Sent postpaid on receipt of price, $1.50.
THE ADAMS COMPANY, Dubuque, Iowa.

STANDARD ROLLER BEARING CO.,
PHILADELPHIA.
Steel Balls,
Ball Bearings,
Roller Bearings,
Automobile Axles.
Send for Catalogue.

HIGH-GRADE LAMPS
Acetylene Gas and Oil
ATWOOD MFG. CO.,
Amesbury, Mass.

MOONLIGHT ON LAKE ERIE
PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and, growing bolder, bursts forth in one pure sheen of grandeur.

Send two-cent stamp for illustrated pamphlet.

Address
D. & B. STEAMBOAT CO.,
WAYNE ST. WHARF, DETROIT, MICH.

GRAY AND DAVIS

"Makers of Smart Automobile Lamps."

Be Sure YOUR CAR is Equipped With Them.

AMESBURY, MASS



THE BEST FOR IGNITION PURPOSES.

COLUMBIA DRY CELLS

NATIONAL CARBON COMPANY, Cleveland, O.

Send for Catalogue.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

On Contract Basis.

Our positive power driven sight feed OILER will interest you. Write for description.

Auto Brass & Aluminum Co., Flint, Mich.

DIAMOND CHAINS

OUR CHAINS OUTWEAR ALL OTHERS

Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

DIAMOND CHAIN & MFG. CO., INDIANAPOLIS

THE
WITHERBEE BATTERY
Solves the Ignition Problem

WITHERBEE IGNITION CO.,
27 Thames Street, New York.

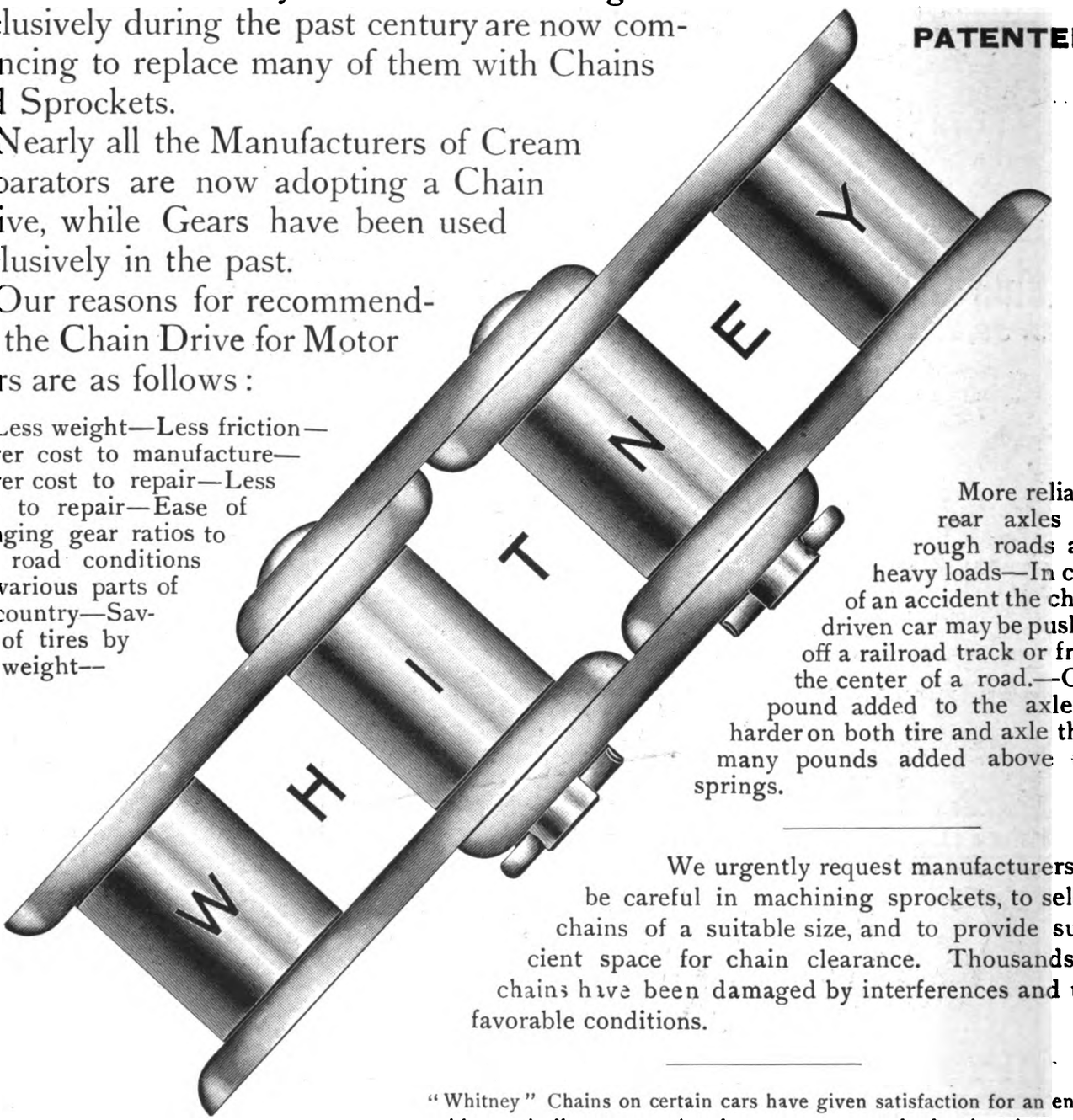
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Builders of Machinery who have been using Gears exclusively during the past century are now commencing to replace many of them with Chains and Sprockets.

Nearly all the Manufacturers of Cream Separators are now adopting a Chain Drive, while Gears have been used exclusively in the past.

Our reasons for recommending the Chain Drive for Motor Cars are as follows:

PATENTED



Less weight—Less friction—Lower cost to manufacture—Lower cost to repair—Less time to repair—Ease of changing gear ratios to suit road conditions for various parts of the country—Saving of tires by less weight—

More reliable rear axles for rough roads and heavy loads—In case of an accident the chain driven car may be pushed off a railroad track or from the center of a road.—One pound added to the axle is harder on both tire and axle than many pounds added above the springs.

We urgently request manufacturers to be careful in machining sprockets, to select chains of a suitable size, and to provide sufficient space for chain clearance. Thousands of chains have been damaged by interferences and unfavorable conditions.

"Whitney" Chains on certain cars have given satisfaction for an entire season with practically no attention, but we recommend cleaning, inspectin and lubricating a number of times a year if best results are desired.

TO CLEAN A CHAIN soak it over night in kerosene or gasolene.

TO LUBRICATE A CHAIN (when clean and dry) soak it for 30 minutes in some heavy melted lubricant, such as best quality beef tallow mixed with a little graphite. The lubricant should be heated in a heavy pan nearly to the boiling point to insure its flowing freely, and the shape of the pan should be such as to permit the chain to be wholly submerged. After treating in this manner the chain should be allowed to cool and the lubricant will then set in the bearings.

It is absolutely impossible to properly lubricate a chain by applying oil from a can to the outside surfaces.

THE WHITNEY MFG. CO., Hartford, Conn.

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Are you acquainted with

Willard W. Low?

Mr. Low is president of the Electric Appliance Company, manufacturers of high grade electrical supplies.

Time was when automobiling was not a continuous round of unhampered pleasure to him.

Stated plainly, he enjoyed about the same measure of peace that a timid woman would on the back of a bronco.

He never knew just what was going to happen.

All of which was attributable to tire troubles that were as exasperating as they were continuous.

There is no telling just how long this thing would have gone on had it not been for—

But let Mr. Low tell it:

"I desire to advise you that automobiling is now a great pleasure to me. Some time ago it got to a point where I was afraid to take out my car on account of tire troubles. I could not take a drive of any account without having them. At last, one fortunate day a friend of mine recommended your tires, and I had my car fully equipped with them. From that time up to the present my tire trouble has been practically nothing.

I desire to congratulate you on the quality of auto tires you are turning out."

Pretty strong proof of the superior quality of our tires, isn't it?

MORGAN & WRIGHT TIRES
ARE GOOD TIRES

MORGAN & WRIGHT, Chicago.

PHILADELPHIA—Cor. Broad and Vine Sts. NEW YORK (Uptown)—214 W. 47th St. NEW YORK (Downtown)—17 Warren St.
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CLEVELAND—347 Huron St. DETROIT—265 Jefferson Ave. ATLANTA—35 Edgewood Ave. ST. LOUIS—588 Vandeventer Ave.
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POPE AUTOMOBILES

POPE Waverley ELECTRICS

PROFIT TO THE DEALER.

The sales of **Pope Waverley Electrics** last year increased 60 per cent. over the year before; and the past three months have increased 60 per cent. again over that. We are not the only ones who have increased sales, and we are glad, because it shows that the **Electric** is being appreciated by the public and by ***some agents.*** Are you among those agents who sell gasoline cars only? If so, you are neglecting the most profitable part of your business. Many of our agents have told us that, had it not been for the **Electric** part of their business this year, they would have lost money. **The Electric is an all-the-year-round carriage.** Its sales are almost as great in the fall and winter, as in the spring and summer.

Are you neglecting a chance to make money at this season of the year? What you can make now is all velvet.

We exhibit in New York at Madison Square Garden only.

Waverley Dept., POPE MOTOR CAR CO.,
INDIANAPOLIS, IND.

NEW YORK CITY, 1733 Broadway
WASHINGTON, D. C., 819 14th Street
BOSTON, MASS., 223 Columbus Avenue
SAN FRANCISCO, CAL., 451 Mission Street

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

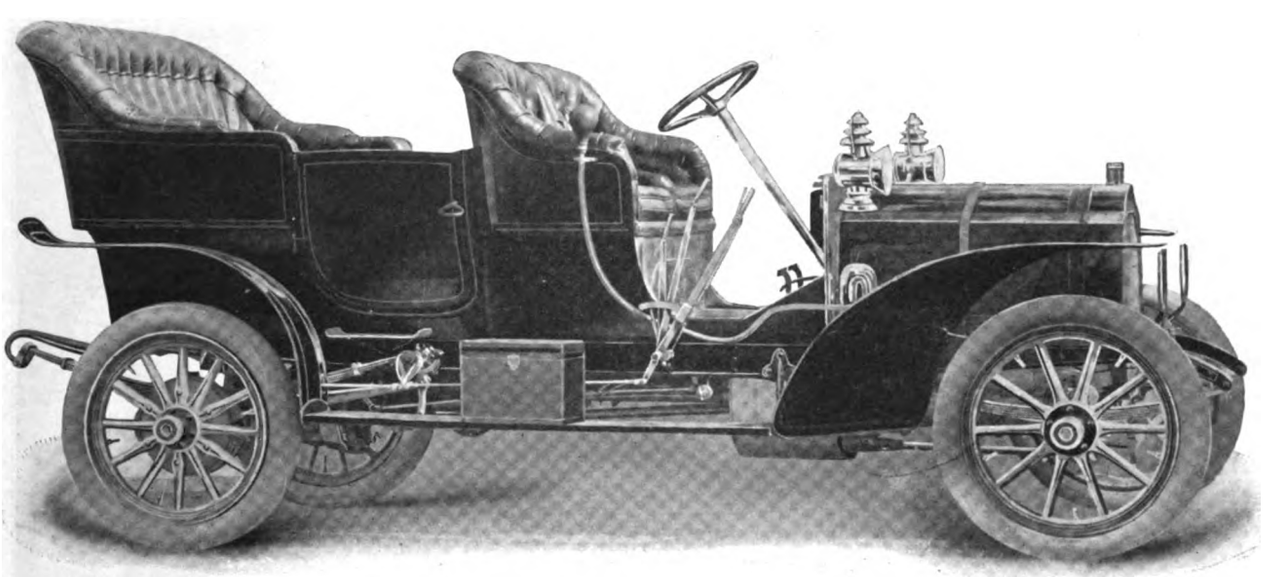
G & J Tire Co.
Hartford Rubber Works Co.
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G & J TIRE CO.

Indianapolis, Ind.

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Packard



"Before the design of the "Packard 24" was accepted by the Packard Company, three cars were built and driven 21,000 miles over every kind of road and grade that exists between Michigan and Massachusetts."

Packard Motor Car Co., Dept. 8,

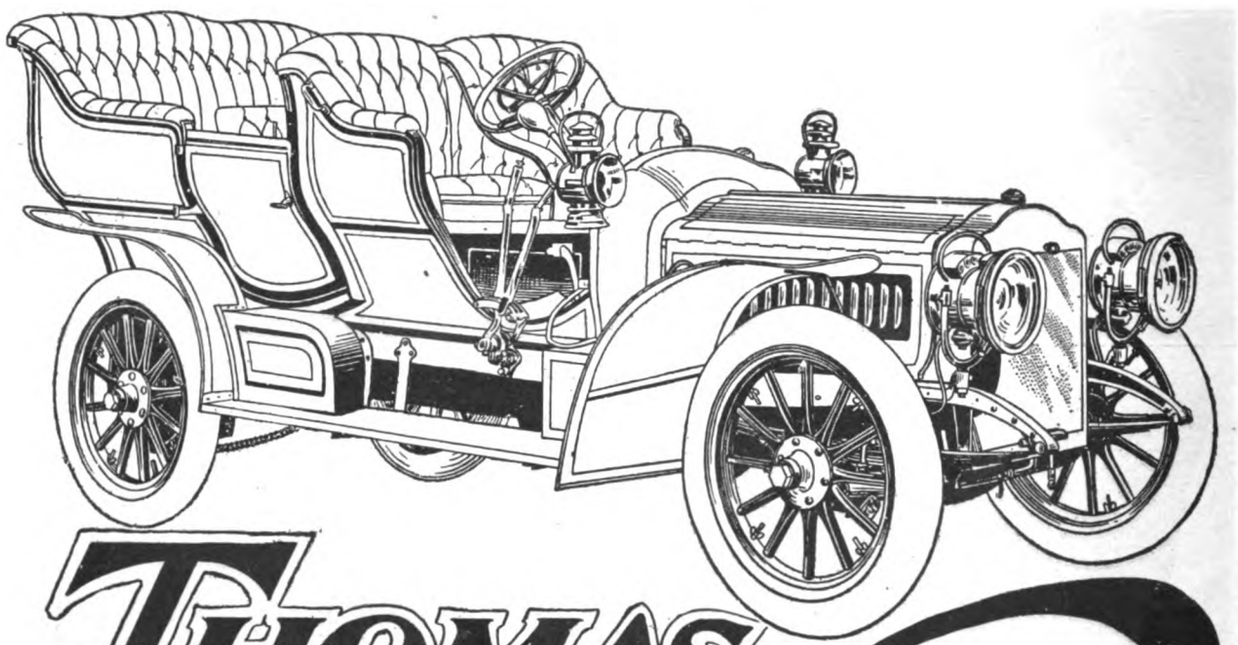
Detroit, Mich.

Member Association Licensed Automobile Manufacturers

New York Branch 1540 Broadway

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"Every Stock Car Guaranteed to Show Sixty Miles an Hour Before Leaving the Shops."—E. R. THOMAS.



THOMAS

AN AFFIDAVIT THAT SPEAKS VOLUMES:

Can any praise of ours compare with the eloquent testimony concerning the 1906 Thomas contained in this remarkable affidavit?

BUFFALO, N. Y., Nov. 10, 1905.

This is to certify, that we, the undersigned, this day rode at the rate of 60 miles per hour with five passengers over average roads, maintaining a speed continuously in regular stock model 1906 Thomas touring car, and went up a 14 per cent. grade with five people on the high speed and on very bad roads, increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation, and the clutch is extraordinarily sweet and effective.

This is the only American built stock car that within our knowledge has made 60 miles per hour on ordinary roads, even without passengers.

(Signed) AUBREY H. MARTIN, Philadelphia, Pa.
C. A. COEY, Chicago, Ill.
F. W. DART, Hartford, Conn.
C. S. HENSHAW, Boston, Mass.
F. B. HARPER, Beverly, Mass.
A. M. SPEER, Jr., Portland, Me.
A S. ROBINSON, New York.
RAYNER GOODWIN, Brooklyn, N. Y.

STATE OF NEW YORK, }
COUNTY OF ERIE. }

Sworn and subcribed to before me this 10th day of November. 1905. ARCHIE I. DRAKE, Notary Public.

THE E. R. THOMAS COMPANY,

1416 Niagara Street, - - - - - - BUFFALO, N. Y.

Members Association of Licensed Automobile Manufacturers.

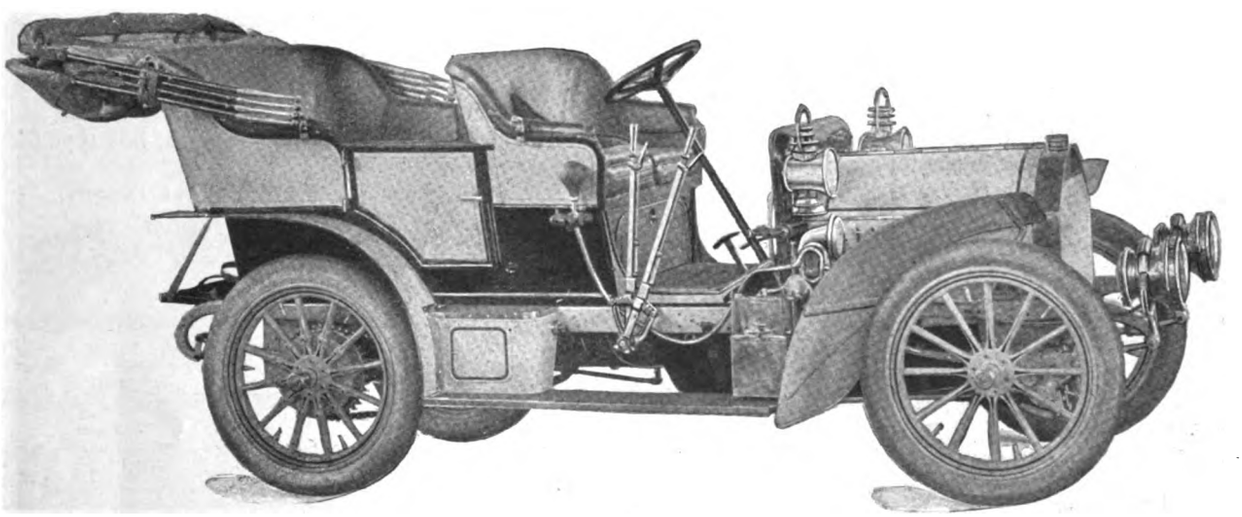
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. 30-35 H. P., $5,000.

Both with complete touring equipment.



TYPE E. 15-20 H. P. $3000.

Top and Luggage Carrier extra

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; extra wide doors; fitted with top irons; color and striping optional.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.
CONTROL, spark and gas levers on steering wheel.

Type "M" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5 to 7; fitted with top irons; extra wide doors; color and striping optional.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.
CONTROL, spark and gas levers on steering wheel.

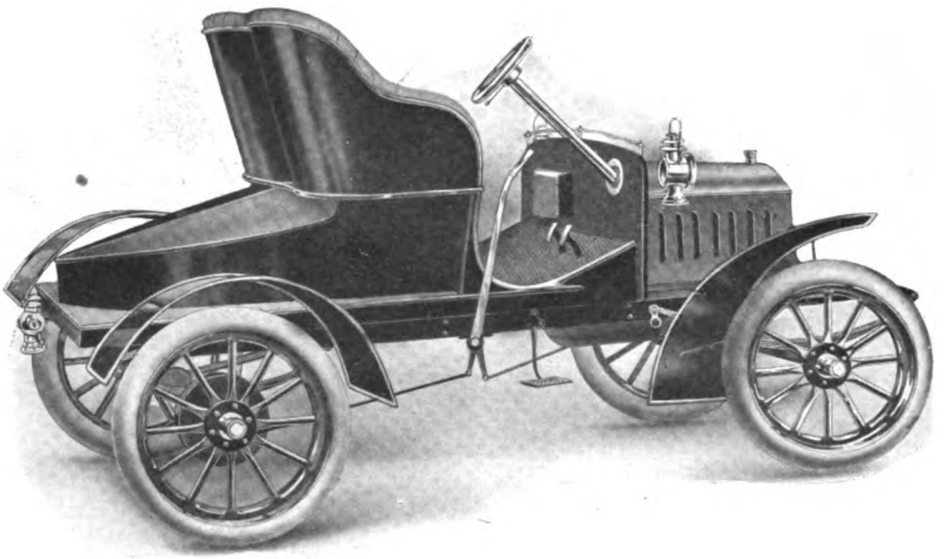
The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 240 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

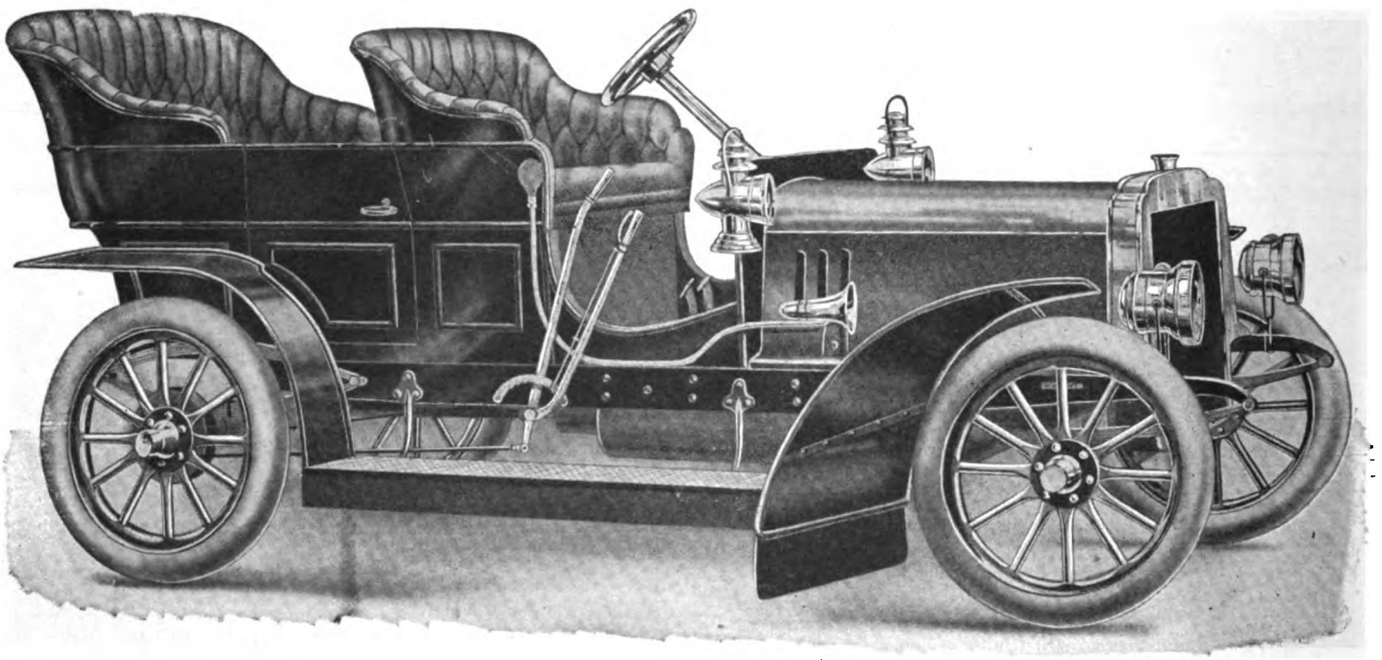
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The Ford 4 Cylinder Runabout

This car—Model N—is the biggest revelation yet made in Automobile construction. A car of this type for less than $500.00 seemed an impossibility, but here it is.

4 Cylinder—15 H. P. Direct Drive. Speed 40 miles. 78-inch Wheel Base. Weight 700 Pounds.



FORD MODEL K.

Six cylinders—40 H. P. 4 to 50 miles per hour on high gear. Perfected magneto ignition. Mechanical oiler. 114 inch wheel base. Luxurious body for 5 passengers. Weight 2,000 pounds. Price, $2,500.00.

No further particulars will be given until these cars are shown for the first time at the Automobile Club of America's show at the 69th Regiment Armory, New York, Jan. 13th to 20th.

DELIVERIES FOR MODELS N AND K WILL NOT BE MADE BEFORE MARCH.

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

FORD MOTOR COMPANY, Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1783 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City.

Canadian Trade supplied by Ford Motor Co. of Canada, Ltd., Walkerville, Ont.

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Diamond

SIDE WIRE SOLID TIRES

For Trucks and Commercial Vehicles. Conceded to be the Best Motor Truck Tire in the market today.

The Rubber is strictly Our Own Stock. It has never been duplicated and Frequent Attempts at imitations have but emphasized Diamond Superiority.

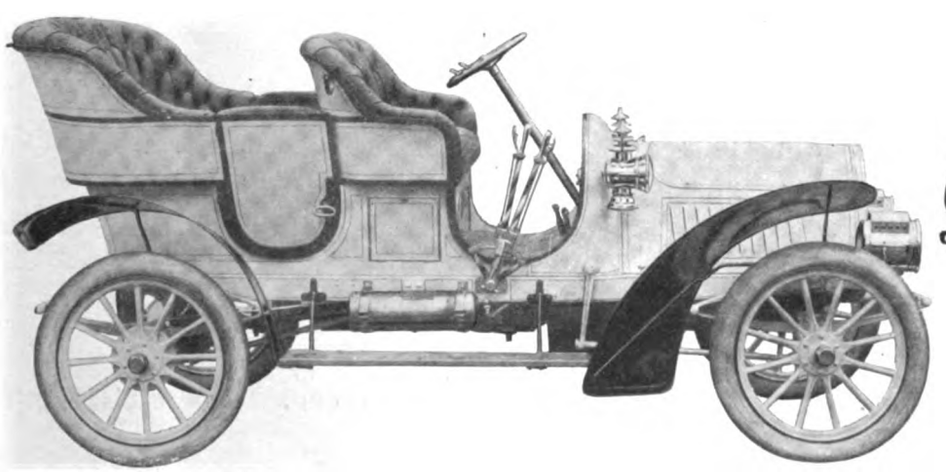
THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.

DETROIT—158 Jefferson Ave.
ST. LOUIS—3366 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—323 Huron St.

SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.



Premier

"The Quality Car"

(AIR COOLED)

Conspicuous in Automobile Construction, by virtue of its beautiful design, great power, speed, ease of carriage, simplicity of manipulation and accessibility. It embraces a 20-24 H. P. four cylinder vertical motor, 4¼ x 4¼ in. bore and stroke, bevel gear shaft, drive, three speeds forward and reverse Premier sliding gear transmission (mounted on five Hess-Bright type ball bearings), pressed steel frame, I beam front axle, 32 in. wheels, 4 in. Clincher tires, 106" wheel base, beautiful cast aluminum curved dash, sight feed precision oiler, cast aluminum hood front and fan, luxurious upholstering, rear seat 40 in. (measure the other cars), irreversible steering gear. Full gas and oil lamp equipment and generator, horn and BRAKES THAT HOLD—altogether comprising a car which has no superior in point of merit and luxury.

Price, $2,000 F.O.B. Indianapolis. **Model L, De Luxe, $2,250.**

Write for catalogue and booklet (S) of Road Experiences.

PREMIER MOTOR MFG. CO., - - Indianapolis, Ind.

Members American Motor Car Manufacturers Association.

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QUEEN
AUTOMOBILES
FOR 1906

3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P.
Price, $2,000.

SPECIFICATIONS

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

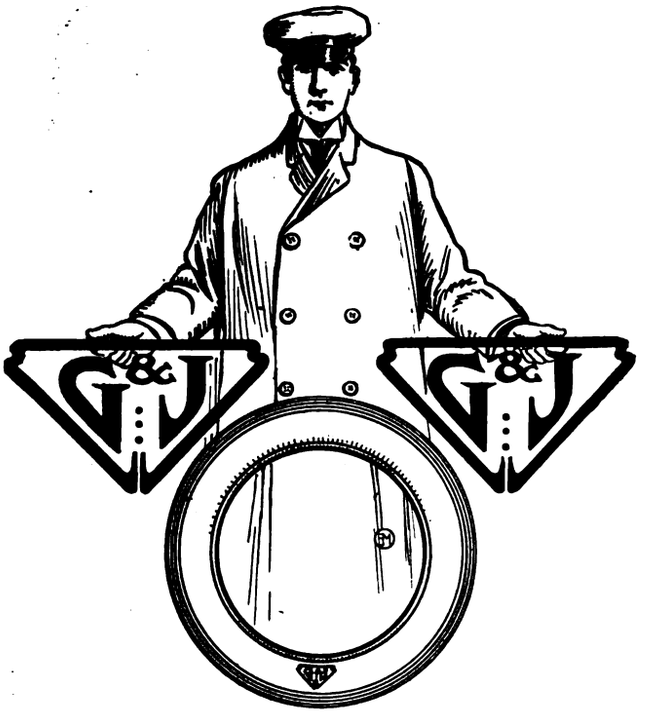
We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

C. H. BLOMSTROM MOTOR CO.,

DETROIT, MICH.

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G&J TIRES

FOR THE

Season of 1906

Open Steam Cured
Strong and Tough
Most Durable
Highly Resilient

The Best Tire Made for Automobile Use

WRITE US

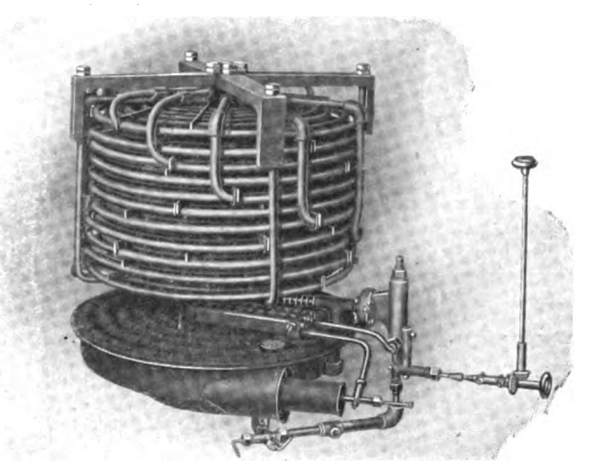
G&J TIRE CO.

INDIANAPOLIS

Boston Buffalo Cleveland Detroit
Chicago Denver San Francisco

The Incomparable WHITE

The Car for Service.



WHITE GENERATOR

Above is illustrated the generator of the White steam car, together with burner, vaporizer, pilot-light and gasolene connections. A glance is sufficient to show that the White generator is totally unlike any other boiler ever designed. We might point out how wide this difference is by calling attention to the fact that in the White generator the water is at the top and the steam at the bottom. In every other type of steam-making apparatus, water is at the bottom and steam at the top.

If the coils of the White generataor should be unwound and straightened out, the generator would be seen to consist of a single long piece of steel piping. Could anything simpler than this be conceived? The capacity of the tubes is comparatively small; i. e., the amount of water and steam contained therein at any one time is small. The tubes will safely withstand a pressure of many times that which it is possible for the steam to attain. Could any safer arrangement be imagined?

As regards the superior reliability of the White system, that is a matter which has been amply demonstrated by the continuous victories and notable achievements of six successive models of "The Car for Service."

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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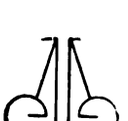
An Investigation of GOODRICH TIRES

Mr. E. Shirts, cashier of the Citizens National Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new. His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with Goodrich Tires 3 in. x 30 in. I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and I found them in perfect condition, not even rim rusted.

I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP TIRE." Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.



Rims branded in the channel with this copyright mark have been ispected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company

Akron, Ohio.

NEW YORK, 66-68 Reade St. and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 892 Mission St.
BOSTON, 161 Columbus Ave. CHICAGO, 141 Lake St.
PHILADELPHIA, 909 Arch St. DETROIT, 80 E. Congress St.
CLEVELAND, 416 Erie St. DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.

HAYNES

Exclusive Features That Appeal to Discriminating Buyers

Model "R," Four Cylinder Touring Car

Roller bearing vertical engines. Cylinders, 5⅛" x 6"; 50 H. P. Cast separately. Sliding gear transmission, with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carburetter which assures perfect mixture in all temperatures and under all climatic conditions. Master Clutch, that has no leather surfaces to wear. Takes hold easily and gradually, without jerking. Shaft drive. Exclusive universal joints, that do away with wear on pins, run in housing packed with grease. One piece nickel steel rear axle, with beveled sprocket gear, driven by roller pinion; thrust eliminated, friction reduced, noiseless; all in a bath of oil. Roller bearings throughout. 108-inch wheel base. 50-inch tonneau, with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight, 2,750 lbs. Price, $3,500, F. O. B. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906 HAYNES roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10% loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of pre-eminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears the transmission device never allows the momentum of the fast moving car to be thrown against the power of the engine, with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft-driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Grey curled hair and hand buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are some reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our catalogue, No. 15, sent prepaid upon request.

"The Car That the Repair Man Seldom Sees"

The Haynes Automobile Co.,

Kokomo, Indiana

Chicago, 1431 Michigan Avenue New York 1715 Broadway

Members A. L. A. M.

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ELMORE ANNOUNCEMENT.

During the New York and Chicago Automobile Shows, 1905, we were approached by hundreds of automobile owners, saying, "If you people would only put out a four-cylinder two-cycle car, you would simply have the rest beat out of sight. It would be practically the same as an eight-cylinder of the four-cycle type, with about one-fourth the complication, and as steady running as a clock." Well, we have built the four-cylinder, and it is all you expected, and more. You may have already heard this from persons who have seen and ridden in it, but you have never heard us say so. We, therefore, take this occasion to announce that it is our firm conviction that not only have we exceeded the most sanguine expectations of our friends, but that in all essential points we have the best four-cylinder car ever built.

Our two-cylinder two-cycle car is a worthy successor to our Model 11, which, for reliability, as is well known, has never been excelled. It is in the details of construction that we have made our great advance, and in changing from chain to shaft drive we accede to the popular demand for a two-cylinder car of that type. Among the details we have improved is in using a new planetary gear running in oil, a popular make of circuit breaker, heads cast solid with cylinder, and on both cars we use the famous Hill Precision Oiler. But, as said above, there are so many things we want to talk to you about that we hope you will at once get into communication with us.

We have made so many improvements on our 1906 Models that we have not the space to speak of them here, but our literature will explain them all in such a manner that you will readily see we have a car with the exact features that have been talked of for years as being most desirable, but are impractical on any four-cycle car on account of complication, rythm of motion, power, etc., but which come perfectly natural to our two-cycle. The action and power of an eight-cylinder car with one-fourth the complication does it all. Ask for literature.

NOTE.—Will exhibit in New York City at Madison Square Garden ONLY.

Members Association of Licensed Automobile Manufacturers.

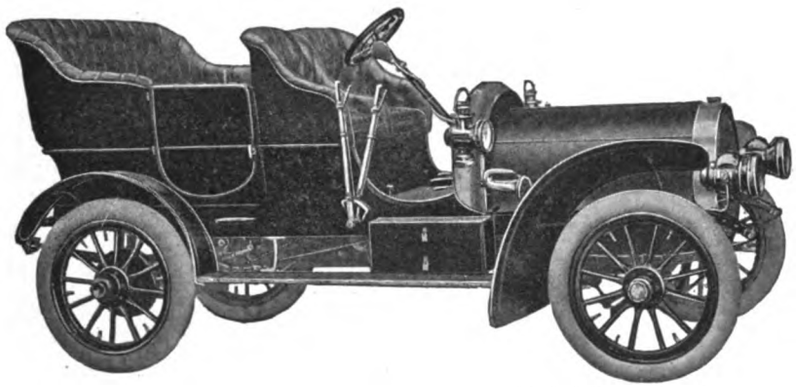
ELMORE MFG. COMPANY, - - - Clyde, Ohio.

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National

Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16-17, made **1,094 3-16 Miles in 24 Hours,** breaking the former World's Record by 78 9-16 miles, and **1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second,** breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the **Unfailing Reliability of Nationals.**



MODEL D—NATIONAL—One of the same kind fully equipped.

"Watch for the Round Radiator"

Write us for anything else you may want to know.

National Motor Vehicle Company,
1000 E. 22d St.
INDIANAPOLIS, IND.

Member American Motor Car Manufacturers' Association, Chicago.

DISTRIBUTORS

Ralph Temple Auto Co.....310 Mich. Ave., Chicago, Ill.
Linscott Motor Co.....163 Columbus Ave., Boston, Mass.
Homan & Schulz Co.....38th St. & Broadway, New York, N. Y.
Tioga Auto Co.....Broad and Tioga Sts., Philadelphia, Pa.
Liberty Auto Co.....138 Beatty St., Pittsburg, Pa.
National Motor Car Agency...705 S. Main St., Los Angeles, Cal.

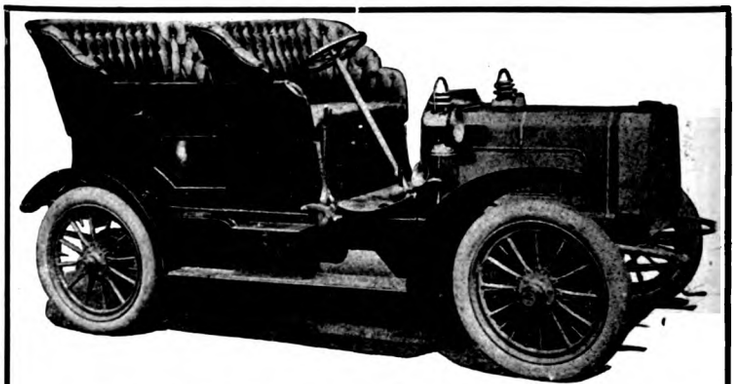
THE 1906
DUQUESNE

Four-Cylinder Runabout is a Winner

Light
Strong
Roomy
Powerful

90 inch wheel base. Four-Cylinder. Four-Cycle. Air-Cooled.
Made of the best material obtainable, and strictly high grade in every particular.
Starts from the seat by a foot lever, no cranking.
Full control on steering column, no side levers.
Speed, 40 miles per hour.
Price, complete with cape top, $2,000.00.

Duquesne Construction Co.
JAMESTOWN, N. Y.



GET ACQUAINTED WITH THE GROUT.

The Car of Quality and Simplicity.

A Four-Cylinder Water-Cooled car of 30-35 H. P. with slide gear transmission, built on sound, sane principles, lacking not one of the accepted attributes of a high-class car, and listing at $2,500.

SPECIFICATIONS:

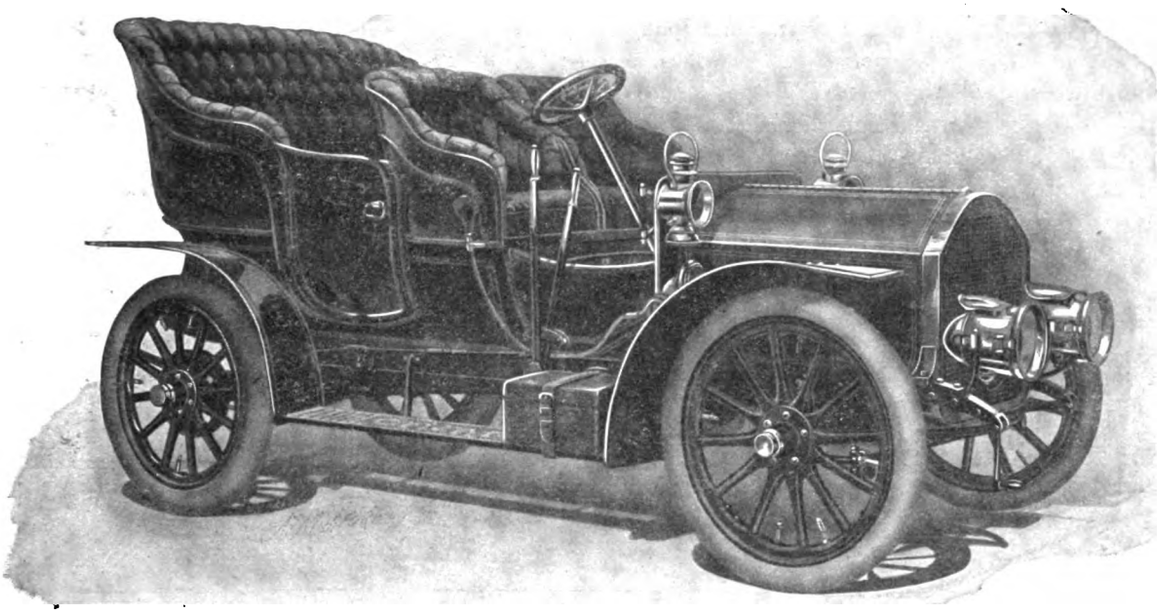
30-35 H. P., 4 cylinder, balanced motor, high tension ignition using o e coil with distributing commutator.
Forced ventilation by fan.
Mechanically operated valves.
Inlet valves interchangeable with exhaust valves.
Control on steering wheel to gas and ignition, no motion transmitted to these levers by movement of steering wheel.
Gear, three speeds and reverse actuated by single lever.
Wheels, 32 inch wood artillery, ball bearings, 4 inch tires.
Armored Frame.
Steering by irreversible worm and sector, dust proof and oil tight.
Lubrication, mechanically operated oiler, a definite amount of oil to all cylinders, crank bearings, connecting rod bearings, etc.
Lubricating system has received great attention and is particularly thorough. It is non-adjustable, that is, set at the factory and needs only to be supplied with oil.
Top and headlight with generator.

We're Ready to Talk to Live Agents.
MADE BY

GROUT BROS. AUTOMOBILE CO., Orange, Mass.
New York Agency, MUNSING & CHAPMAN, 1858 Broadway.

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Waltham=Orient



Waltham-Orient, Model R, $2250.

The Car of Today Must do More than Look its Price. The high priced, high powered motor car is all right—it has its place and its purchasers, but the POPULAR DEMAND is for a car of moderate price, reasonable speed, that will be maintained up-hill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it, and you have a right to expect it.

It is because it combines all of these important and necessary features that

The Waltham-Orient is the Leading American Car of Its Price

SIX MODELS FOR 1906.

Model R, a Swell Special 20 H. P.....	$2,250
Model N, 20 H. P. Tourist.....	$2,000
Model L, 16 H. P. Tourist.....	$1,750
Model M, 16 H. P. Runabout, Detachable Tonneau	$1,750
Model K, 16 H. P. Two Passenger Runabout	$1,600
Model BB, 4 H. P. Friction Drive Buckboard	$400

We are alive for live agents. Write for specifications and proposition. We will exhibit at New York, Chicago and Boston Shows.

WALTHAM MANUFACTURING CO.

General Offices and Factory, WALTHAM, MASS., U.S.A.

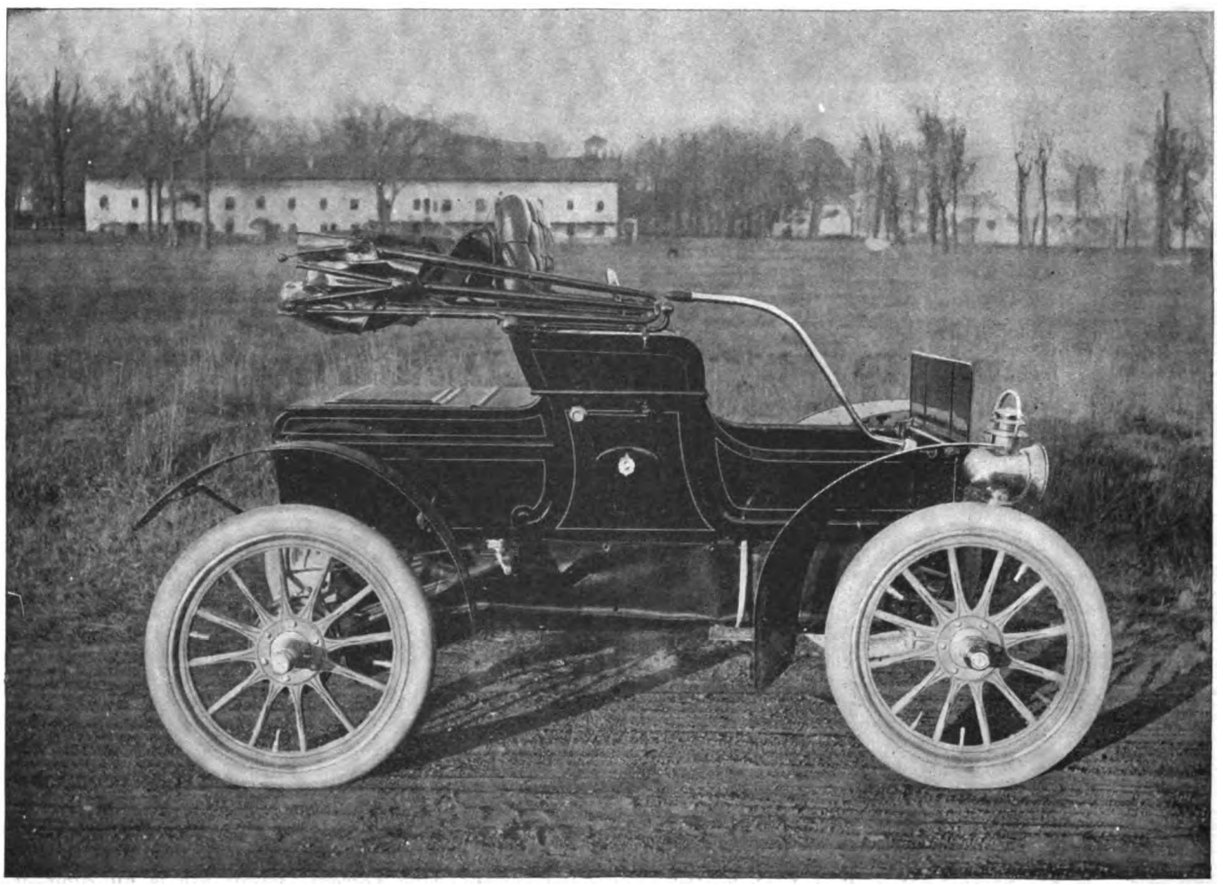
Members Association of Licensed Automobile Manufacturers.



Model BB Friction Drive Buckboard, A Remarkable Motor Car for $400.

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OLDSMOBILE



Standard Runabout, Model "B" Price, $650.

For 1906 we have brought out, in addition to our well known curved dash runabout (the "you see them wherever you go" kind), a straight dash or "piano box" runabout, which we sell at the same price. This style appeals strongly to a certain class of drivers. It is unique and attractive and possesses all the most desirable features essential to a satisfaction-giving runabout.

It has a simple single cylinder motor, with 7 h. p. It is lever controlled. Starts from the seat; has safety device to prevent all danger of back fire; effective and easily operated brakes, and many attractive and serviceable features, making it up-to-date and desirable in every way—a big value for the money, and essentially a car for business utility.

Use the Catalog Coupon below for further particulars regarding the Standard Runabout, Model "B," price $650; the Palace Touring Car, four-cylinder, Model "S," price $2,250; two-cycle Model "L," price $1,250, or any of our commercial vehicles.

OLDS MOTOR WORKS, - - - - Lansing, Mich., U. S. A.

Member A. L. A. M.

Our New Models will be on Exhibition at the Madison Square Garden Automobile Show, Jan. 13 to 27.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K4 Model L.... Traffic Cars....

Name .....

Address .....

.....

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name .....

Address .....

.....

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K4

Name .....

Address .....

.....

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Change Tires 30 Seconds Goodyear Universal Rim

SUPPOSING you were 25 miles from home, and your tire exploded. And you hadn't another with you. And when you stopped at the garage, the man said: "I'm sorry, but I haven't a single tire of that make."

Wouldn't it make you mad?

Of course it would, if you had an *ordinary* rim.

But if you had a Goodyear Universal Rim, you would smile and say: "Bring on any old tire, as long as it's a clincher my rim will take it." And in less than three minutes you would be enjoying the scenery once more.

Because it *isn't* an all-day job to take off and put on a tire when your car has Goodyear Universal Rims. Just jack up the wheel and in 30 seconds the old tire is off, and in another 30 seconds the new tire—ANY kind—is on. You need no tools but the hands—and are "fixed up" and on the road while the man with *ordinary* rims is hunting for his crowbars and levers.



Figure 1

You see the flange comes right off on Goodyear Universal Rims, like Fig. 1.

And then a 30-inch tire (for example) slides right on to the 30-inch rim like Fig. 2, as easy as you would put on yoor hat. On an ordinary rim you would have to pry that 30-inch tire over a 31-inch flange.



Figure 2

You know what a profanity-inspiring job that is, and it doesn't do the tire any good, either.

Now this is all there is to taking off and putting on a tire when you have Goodyear Universal Rims. See how simple and easy it is.

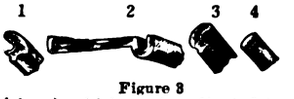


Figure 3

The rim is made up of four parts, like Fig. 3.

Nos. 1 and 3 are the removable flanges (rings), which can be adjusted to any clincher tire.

No. 2 is the base of the rim attached to the felloe of the wheel. It can be used without fitting on any standard wheel built for the standard clincher rims.

No. 4 is the locking ring, which holds the flanges in place.

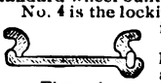


Figure 4

If you have decided to relieve yourself of all tire troubles and in consequence ride Goodyear Detachable Auto Tires, a section of the rim, when put together, would be like Fig. 4.

Or, if you ride an ordinary clincher tire, the rim section would look like Fig. 5.

The ring which holds the flanges in place is split at a point alongside the valve stem, like Fig. 6.



Figure 5

It can't be removed (and, of course, the tire can't come off) while the flange presses against it.

This flange is kept tight against the ring by a plate which slips over the valve stem, like Fig. 7.

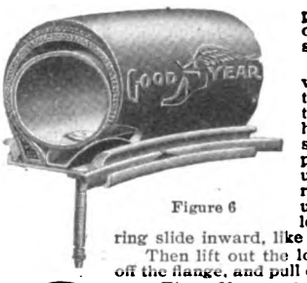


Figure 6

When you wish to remove the tire, loosen the nut which holds the valve stem down, and push the stem up through the rim. This pushes up the plate and lets the flange ring slide inward, like Fig. 8.

Then lift out the locking-ring, slip off the flange, and pull off the tire.

Time, 30 seconds. No tools but the hands.



Figure 7



Figure 8

Those who are weary of tire troubles are specifying Goodyear Auto Tires on Universal Rims. This equipment *costs no more* than the ordinary kind, and multiplies the pleasures of motoring many times.

Ask for our "Good News Book" and find out all the good points of the Goodyear Auto Tire and Universal Rim. It's of vital interest to the Manufacturer, Dealer or User who is satisfied with nothing but *the best*.

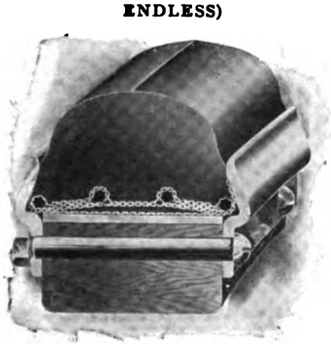
THE GOODYEAR TIRE & RUBBER CO., Grove Street, Akron, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 696 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

We furnish ALL SIZES of Tires with BAILEY TREADS, if desired

TURNER SOLID TIRE

ENDLESS)



THE CORRECT TIRE

FOR

Delivery Wagons,
Heavy Trucks,
Broughams,
Hansoms, Surreys,
Victorias,
Hotel 'Busses,
Hose Wagons,
Ladder Trucks,
Chemical Engines,
Water Towers,
Fire Engines.

TIRE ECONOMY

COST OF MAINTENANCE is main factor for consideration in selecting tire equipment.

MAKE CAREFUL COMPARISONS.
Don't be prejudiced by poor results obtained from cheap tires.

STOP EXPERIMENTING and end dissatisfaction by adopting a tire that has demonstrated its worth by years of use under all conditions, and to thousands of satisfied users

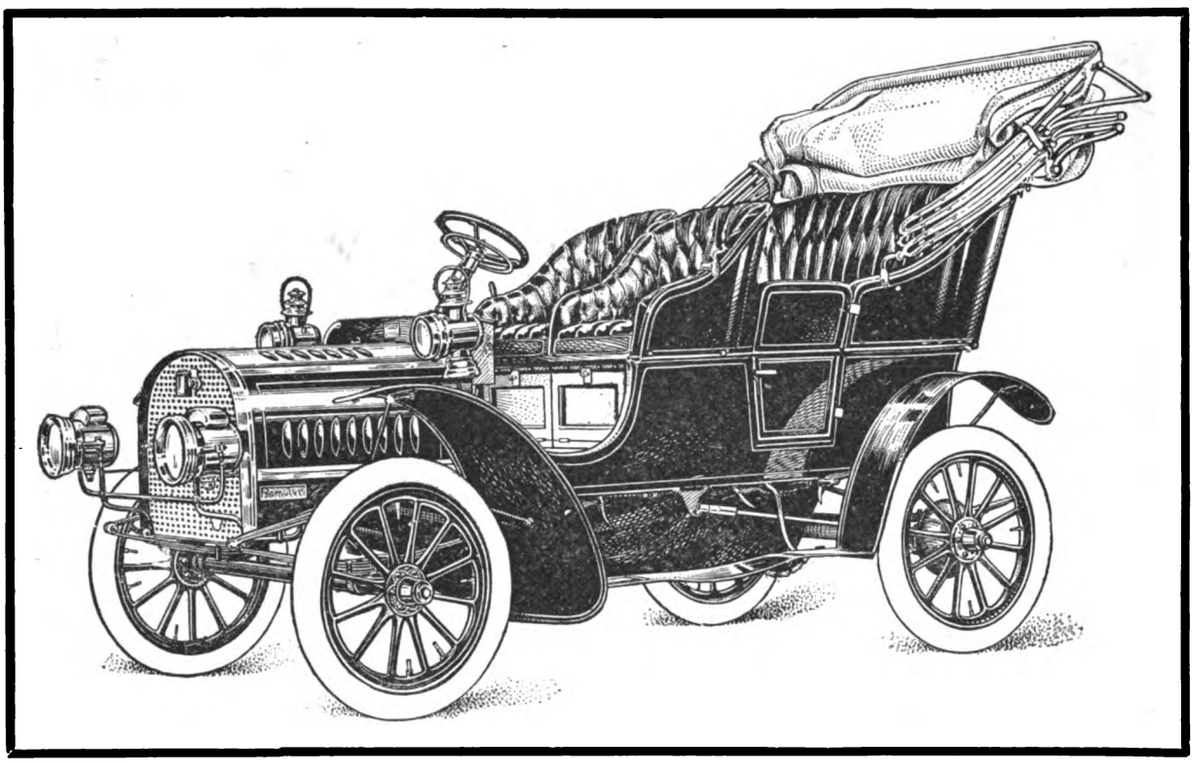
PROVEN LOW COST OF MAINTENANCE.

THE HARTFORD RUBBER WORKS CO.

HARTFORD, CONN.

Branch Houses:—NEW YORK, BOSTON, PHILADELPHIA, BUFFALO, CLEVELAND, DETROIT, CHICAGO, DENVER, SAN FRANCISCO, LOS ANGELES.

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Rambler

Surrey Type One

We invite inspection of this car, which stands, without question, the leader as a practical car for general utility and steady daily service in the hands of the ordinary non-professional operator.

It is the result of years of development in the line of absolute simplicity in control and the elimination of those complications that tend to petty and sometimes serious breakdowns, that while readily repaired by expert repair men, result in vexatious delays and expense to the layman who prefers to operate his own car.

Briefly, it is a five-passenger touring car of elegant appearance, with power to carry you anywhere at any speed up to 35 miles per hour, with the maximum of comfort and satisfaction.

We will gladly show you, and a practical demonstration at our Branches and Agencies everywhere will be our most convincing argument.

Ready for the road, with lamps, horn and full equipment of tools, etc., $1,200.

Cape top, or canopy top with glass front, $100.

The December Rambler Magazine contains an interesting description of our 1906 cars. Ask for a copy.

Thos. B. Jeffery & Co.

Main Office and Factory - - - - Kenosha, Wis., U. S. A.

Branches:

Boston, 145 Columbus Ave.
Philadelphia, 242 N. Broad Street.
San Francisco, 10th and Market Streets.
Chicago, 302-304 Wabash Ave.
Milwaukee, 457-459 Broadway.
New York Agency, 134 W. 38th St.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, December 14, 1905. No. 12

HERE HE IS AGAIN!

Pennington Now Blowing Bubbles f r Toledo —Nutless Truck his Newest Wonder!

Like the proverbial penny, Pennington has turned up again.

This time Toledo, Ohio, is his objective. At present he is dealing only with such a comparative trifle as a spark plug. But, of course, he has larger things—much larger things—in view. He would not be Pennington were it otherwise. There's only one of him—E. J. are his initials—and Colonel Sellers never was in his class. He has flitted from one continent to the other and back again, and has "rested" in many, very many towns, and never has he failed to blow a fine large bubble and to equip the Boards of Trade and the admiring townspeople generally with eyeglasses that enabled them to see millions in its every changing hue.

Usually before they have removed the glasses Pennington has found the air oppressive and sought a different climate. He seems to relish the game. He seems never to tire of it. When it was newer it netted him so many dollars that he used diamonds as jackstones. Latterly things have not come his way so swiftly, but his solicitude for Toledo suggests that he is in no wise discouraged. He apparently believes in the "try, try again" maxim. Not even the "disappearance" of his airships or of the million-dollar Standard Oil Automobile Co. of St. Louis, on which the Motor World turned such a flood of light, have deterred him.

In Toledo one of the papers refers to him rather cautiously, it is true, but in big black type as the "father of the American automobile in that he states that he made the first exclusively automobile ever made in America."

Just now he is "having the machinery made" in Toledo, not for the famous little motor which will burn kerosene or any other old thing, and for which every farmer craves, but for a simple ignition plug. But the mere fact that he has honored Toledo to this extent "leads to the belief that he will ultimately locate his entire plant in that city." "His present plans call for a large institution which will require a large amount of capital"—that's Pennington, all right. "His present project is to erect a plant for manufacturing automobile parts according to his own ideas, a specialty being made of light truck wagons having a capacity of two tons. These are also to be made after a new pattern, which, it is stated, will require only two or three bolts in the entire construction" —that's the same old Pennington in every line.

The Toledo paper refers to him as E. J. Pennington, of Grand Rapids, Mich., but the thumb marks are only too plainly those of "the only" Pennington, of New York, London, Cleveland, Cincinnati, St. Louis, Cortland, N. Y.; La Crosse, Wis.; Carlisle, Pa.; Racine, Wis., and the Lord alone knows how many other places.

Knox Acquired Engine, not Car.

The Knox Motor Truck Co., Springfield, Mass., will not, after all, take up the manufacture of pleasure cars. It transpires that their deal with the representative of the Sunset Automobile Co., San Francisco, did not have for its object the reproduction in the East of the Sunset car, as was first reported, but for the acquirement of the rights to use for commercial purposes only the Libbey two-cycle engine, with which it is equipped. These rights have been secured, and the motor will be used in a new heavy delivery wagon of about 2,500 pounds' capacity, which the Springfield concern will add to its line early in the spring.

Armstrong out; Burk in.

W. W. Burk was this week appointed manager of the Electric Vehicle Co.'s New York branch, succeeding F. C. Armstrong—a change that will cause considerable surprise to the local trade. Mr. Burk had been in charge of the E. V. branch in Boston for several years, and has all the qualifications that should enable one to "hold his own" in the metropolis. The vacancy caused by Burk's promotion has not yet been filled.

Brock to Leave Autocar.

M. I. Brock, sales manager of the Autocar Co., Ardmore, Pa., has resigned that office, and about the latter part of January, when his resignation becomes effective, will locate in New York. Mr. Brock was so generally considered an Autocar fixture that his change will prove a widespread surprise.

"LANDED" A LAWYER

He was a Novice so the Manhattan Storage Took Him in - Now he Sues.

One of those dealings for which the sweet-scented Manhattan Storage Company has made a name was uncovered last Tuesday when counsel for the firm was called upon to hand in a brief to Judge Moore in the Twelfth District Municipal Court, New York, in an action brought against them by George W. Carr, a lawyer of 29 Wall street, or have judgment taken by default.

The tale hanging thereto makes interesting reading and serves as an apt illustration of how even those trained to be on the alert in business dealings will place trust in their fellow man to an extent that is amazing in the light of their experience.

Last August Mr. Carr wished to provide his better half with an easily managed vehicle for use about his summer home in New Jersey, and responded to an alluring advertisement of a second-hand "Columbia Electric Elberon Victoria," which was held forth as being in the very prime of condition, with batteries as good as new, and was offered for the small sum of $450. Mr. Carr admits to a profound ignorance of electric vehicles and had no particular desire to acquire one for his own use. The first visit was without result, but the next day Mrs. Carr telephoned an offer of $300, which was accepted right out of hand and a second inspection was made.

"And me a lawyer!" disgustedly said Mr. Carr when seen by a Motor World man. "I have no words to express my chagrin at having been roped in so neatly. The very way in which they snatched up the offer of $150 less should have been sufficient to put me on inquiry. And I understand the man who waited on us, James Hand, is out on bail on a similar charge brought by a theatrical man named Perley. Of course, practically the only thing I cared about was whether the thing would go or not, and they guaranteed that it was good for at least thirty-five miles on a single charge of the battery. And—well, what's the use of swearing now, but their whole manner of dealing should have roused

(Continued on page 578.)

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The Week's Incorporations.

Cambridge, Mass.—Harvard Automobile Co., under Massachusetts laws, with $45,000 capital. Treasurer, R. A. Faye.

Pontiac, Mich.—Pontiac Motor Co., under Michigan laws, with $25,000 capital; to make automobiles. Corporators—Martin Halfpenny et al.

Newark, N. J.—The Semi-Dry Battery Co., under New Jersey laws, with $135,000 capital. Corporators—Jay E. Dunn, Arthur F. Jackson and L. Breed Jackson.

New York City, N. Y.—Automobile Trade Credit Association, under New York laws, with $1,000 capital. Corporators—F. J. Alvin, E. J. Willis and J. E. Murray.

Newark, N. J.—Austin Auto Co., under New Jersey laws, with $25,000 capital. Corporators—Herbert Austin, Thomas G. French, Jr., and Charles Krebs.

New York City, N. Y.—The Perfection Reversing Gear & Supply Co., under New York laws, with $50,000 capital. Corporators—A. G. Brodie, G. W. Storm and G. D. Maxwell.

Buffalo, N. Y.—The Palace Motor Car Co., under New York laws, with $15,000 capital, $8,000 paid in. Corporators—Charles F. Benzig, Nathan Dougherty and Charles E. Shaw.

Milwaukee, Wis.—Welsh-Estberg Co., under Wisconsin laws, with $50,000 capital; to manufacture motor cars. Corporators—Harrison S. Green, Charles G. Welch and William O. Welch.

St. Louis, Mo.—St. Louis Motor Car Co., under Missouri laws, with $100,000 capital; to manufacture motor vehicles. Corporators—Marshall A. Sattley, Marquis Eaton and M. M. Keiner.

New York City, N. Y.—Gaulois Tire Co., under New York laws, with $500 capital; to manufacture all kinds of tires. Corporators—Edward S. Griffing, George A. Burkhardt and John G. Craig.

Boston, Mass.—Crown Motor Car Co., under Massachusetts laws, with $40,000 capital; to deal in automobiles. Officers and corporators—President, W. A. Shafter; treasurer, G. M. Barnum, Jr.

New York City, N. Y.—Franklin Automobile Agency, under New York laws, with $500 capital; to deal in automobiles. Corporators—Edward S. Griffing, George A. Burkhardt and John G. Craig.

Chicago, Ill.—Drake Electric Co., under Illinois laws, with $10,000 capital; to manufacture automobiles and electric appliances. Corporators—James M. Wilson, William Herrick and Frank E. Drake.

Detroit, Mich.—The Aerocar Co., under Michigan laws, with $100,000 capital; to make air cooled automobiles. Corporators—E. J. O'Hagan, A. Y. Malcomson, H. H. Thorp, W. G. Morley and M. O. Reeves.

Peoria, Ill.—Illinois Automobile & Parts Co., under Illinois laws, with $10,000 capital; to deal in automobiles and accessories. Corporators—J. Arthur Holsman, H. C. Marth, H. W. Bovee, C. E. Nixon, J. W. Goings, W. E. Epperly, William Eck and Emil Schimpff.

Jersey City, N. J.—The Pneumatic Ball Tire Co., under New Jersey laws, with $3,000,000 capital; to manufacture automobile tires. Incorporators—Frank A. Magowan, Brown McDonald and Frank Adams.

New York City, N. Y.—Dac Automobile Supply House, under New York laws, with $500 capital; to manufacture and deal in automobile parts. Corporators—Edward S. Griffing, George A. Burkhardt and John G. Craig.

Goodyear Gets Big Broadway Location.

After January 1 the Goodyear Tire & Rubber Co. will be "at home" in New York in the fine new building on the southeast corner of Broadway and Sixty-fourth street, which is now being made ready for their occupancy. The Autocar Co., of New York, held the original lease, but disposed of it to the Goodyear people. The latter will occupy the entire building, which is of three stories and basement, with a glass frontage of 54 feet on Broadway. The location is on a wide open part of that thoroughfare, where it must be seen from every elevated railway train and by every person who comes from the subway. Electric signs will impress the Goodyear establishment on their minds.

"They all will know a good deal more about Goodyear tires than they ever knew before," remarked Manager Harwood with a significant smile.

This new branch will, of course, carry a full stock of the Goodyear goods, and it is promised that its vulcanizing department will be the largest in New York.

Philadelphia Dealers Elect Officers.

A. E. Maltby, of the Philadelphia branch of the Winton Motor Car Co., has been elected to succeed himself as president of the united Philadelphia Automobile Dealers' Association. The secretary cast the ballot for all the officers, the others being as follows: Vice-president, G. S. Smith, the Motor Storage Co.; secretary-treasurer, L. J. Morse, Locomobile Co.; directors, the officers, and W. F. Smith, T. B. Jeffery & Co., and Daniel Cohen, Rea Motor Car Co. Show plans were discussed at length, and it was decided to hold the annual Philadelphia exhibition in the Commercial Museum Amphitheatre from February 24 to March 3. Chester I. Campbell, of Boston, was engaged as manager.

Cramer Heads Buffalo Ticket.

The annual meeting and banquet of the Buffalo (N. Y.) Automobile Trade Association will be held in the rooms of the Automobile Club of Buffalo to-morrow (Friday) evening. The following ticket is up for election: For president, J. A. Cramer; for vice-president, W. C. Jaynes and G. H. Poppenberg; for secretary, D. H. Lewis and John Frey; for treasurer, John J. Gibson; for executive committee, E. C. Bull, J. B. Eccleston, ... E. Denniston, N. P. Baker, P. W. Eigner, John Frey and Cal Paxton.

In the Retail World.

Githens Brothers Co. have taken the agency of the F. B. Stearns car for Chicago and Milwaukee.

Sheets & Knodle, De Kalb, Ill., have taken up the sale of automobiles. They will handle the Mitchell car exclusively.

Hatch & Co., New York agents for the Compound car, have reopened. They are now located at No. 1,655 Broadway.

The Fisher Automobile Co., Indianapolis, is erecting a large addition to the garage at No. 330 North Illinois street. The new structure will cost $5,000.

John J. Short & Bro. contemplate erecting a three story brick and limestone trimmed garage in Philadelphia. It is to be located at 2,018-2,020 Sansom street.

The L. C. Gilson Co., Portland, Me., have opened temporary quarters at Elm and Cumberland streets, that city. The Ford and Stanley will be the cars represented by the company.

To secure much needed elbow room the Santa Rosa Cyclery and Garage, Santa Rosa, Cal., has moved from the old Dougherty-Shea Building, on Mendocino street, into the new structure on 5th street.

The White Sewing Machine Co., Cleveland, Ohio, has taken over the business of James F. Cox & Sons, at No. 662 State street, New Haven, Conn. W. P. Frost, of New York City, has been placed in charge.

Frank W. Howell, as receiver for the Dayton Motor Vehicle Co., Dayton, Ohio, has filed a report showing receipts of $8,452.66 and expenditures of $8,252.91, leaving a balance of $199.75. An indebtedness of $2,285.55 remains, part of which is covered by the balance and several patents.

The Packard agency in Buffalo, N. Y., which early this season was transferred from the Centaur Motor Co. to the Jaynes Automobile Co., has again changed hands. Ex-Mayor Alliger of Tonawanda, N. Y., who had an interest in the latter concern, has withdrawn, taking the Packard agency with him, and will set up on his own account on Main street, in Buffalo.

C. F. Bates, a repairman and mechanic of Brockton, Mass., has filed a voluntary petition in bankruptcy. His liabilities are scheduled at $29,982, with assets amounting to $3,200, of which $3,000 is for a life insurance policy. Some of the liabilities were contracted when Bates was a co-partner with F. A. Hunt, in the Commission Automobile Company, now dissolved.

The L. W. Pond Machine & Foundry Co., Worcester, Mass., has completed an addition, 100x60 feet, to its foundry department, and will discontinue the manufacture of metal planers and will conduct in its stead a modern garage. Caleb Calvin has retired from the business, and M. T. O'Leary has succeeded him as president and treasurer. James W. Murphy, of the Prentiss Tool & Supply Co., has been engaged to take charge of the automobile business.

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DEPARTURES IN THE DUNLOP

That Well Known Tire Radically Altered—Special Rim No Longer Required.

In the light of a year's experience with the Dunlop detachable tire, the Hartford Rubber Works have not been backward in recognizing the shortcomings of its first model, and for 1906 have added radical improvements that will do much to increase the vogue of the mechanically fastened tire, and that in the case of the Dunlop itself are so marked that it has "held its own" in convincing fashion.

The chief objection raised to the Dunlop tire last year was the fact that it required a special rim. This left the user of this type stranded unless replacements of the same tires could be had. Equally bad was the certainty of a tire creeping the moment it was punctured or through any other means became sufficiently deflated, so that before it was possible to stop the car the valve stem would be torn off, making it absolutely necessary to carry spare tubes and placing a roadside repair beyond the capacity of the average driver. These defects have all been taken account of and entirely eliminated in the design of the new rim.

First and foremost, the new rim will be made in standard clincher sizes, and with the aid of reversible beads will not only accommodate the Hartford Dunlop, but any standard clincher tire. The depth of the gutter has practically been doubled, this change greatly increasing the factor of safety as a preventive of the possibility of the bead blowing off the rim. The most striking improvement is, however, embodied in what is termed an "endless, floating ring." This not alone acts as a seal, preventing the entrance of moisture at any place except the valve hole, which will be protected by the use of a metal base valve, making the tire as a whole exceptionally waterproof, but constitutes the long-sought for non-creeping device. When the tire is flat this ring rests lightly on the inner edges of the cover throughout its entire circumference, thus effectively preventing any movement of the tire about the rim should it be ridden in this condition.

In proof of this, a tire of the new model that had already been run the equivalent of several hundred miles on a test wheel, was fully deflated and run flat for forty-five miles, the cover and rim being carefully marked in order to be able to note any movement. Subsequently the tire was reinflated and run several hundred miles more on the test wheel, which is eloquent testimony of its ability to withstand this treatment, inasmuch as the drag on the test wheel is far greater than it is possible to obtain on the road. This floating ring is of course only adaptable to the detachable edge clincher rim, and it is the intention of the company not to make it fit 1905 Dunlop rims.

During the past half year exhaustive experiments have been made with a view to improvement in the construction of the tire itself, and after thoroughly testing something like fifty different experimental types, it is claimed that hitherto unknown results have been obtained which will form a feature of the 1906 line of Dunlops. The composite of the numerous experimental types designed and tested out consists of a wrapped tread cured in one heat and vulcanized in the position it takes when on the rim. In addition to this, the inside of the casing is a true circle. This means that when inflated the tire is not called upon to bear an unnecessary strain at any one point. In other words, the compressed air does not have to gradually make the tire round, something that must take place eventually, regardless of what the original internal section of the tire may be. The base of the tire is further given a reverse curve, which acts as a preventive of rim cutting.



Where the general make-up of the tire itself is concerned, the cover stock will be softer than formerly, and a strip of pure gum will be inserted between the cover and the outer layer of fabric. Above this will be the regulation breaker strip. This is a combination designed to prevent what is commonly known in trade parlance as "shuffling"—that is, movement of the several layers of the tire upon one another, a defect that brings about rapid disintegration of the whole construction.

The 1906 line of Hartford clincher tires will in all respects conform to the same high standards of improved construction just described, in addition to being fitted with the new floating ring device, thus obviating the necessity of using lugs, although for obvious reasons the same ring will not be available for both types of tires.

The sweeping changes not only represent many months' work in bringing about, but also entail a tremendous amount of new equipment, particularly as regards the alteration of the Dunlop sizes to conform to customary clincher standards, entirely new facilities, even to the extent of tube sizes, being necessary in this case. In addition to this, facilities have been installed to produce reverse curve tires to conform to 1905 rim sizes, so that even for renewal business strictly up-to-date tires will be furnished.

INDEPENDENTS GO INTO TIRES

Company Formed, Plant Secured and All Else in Readiness—Details of the Project.

Rumors that had been current for several weeks that most of the prominent "independent" automobile manufacturers identified with the American Motor Car Manufacturers' Association were concerned with the formation of a big co-operative tire manufacturing plant crystalized into fact this week. Their plans are so well matured that a factory in this city already has been secured, and it is anticipated that the Ajax tires themselves will be in evidence on all the "independent" cars at the A. C. A. show next month.

Ajax Standard Rubber Co. is the style under which the company has been incorporated under the laws of New York with $100,000 capital. Horace de Lisser is its president, and Robert A. Patterson, treasurer. The secretary has not yet been selected. Mr. de Lisser was at one time connected with the sales department of the International A. & V. Tire Co., and later has been agent for Holbrook's Worcestershire sauce. Mr. Patterson is president of the Tarrytown (N. Y.) National Bank. The tire itself will be styled the Ajax. It will be of the standard clincher type, and will be manufactured in New York in a plant located at One Hundred and Sixth street and East River, New York. The building already has been leased, and the necessary equipment ordered from the John Thorpe Sons Co., Trenton, N. J. The superintendent of the plant will be Louis P. Destribats, formerly superintendent of the International A. & V. Tire Co.

The Ajax Co. has applied, through counsel, for a license to manufacture under G. & J. patents.

Mr. de Lisser stated to a Motor World man that failure to obtain the license would not affect the Ajax plans. They were ready to pay royalty, and indeed probably would set aside an amount on each tire as a sinking fund, which the G & J people could have whenever they wanted it. Mr. de Lisser made it plain that they were not seeking a fight or to create a disturbance of any sort. Ajax prices will be the same as the existing prices on other tires, likewise the guarantee, and, in all probability, the weights and sizes, though on this last point he would not commit himself definitely.

In view of this state of affairs, Mr. de Lisser was asked wherein the Ajax Co. could favor its patrons. He pointed out that as the stockholders were practically all automobile manufacturers, they would share in the dividends. Pressed closer, he became more specific.

"The new company will assure manufacturers that they will get the tires they want whenever they want them and in whatever quantities," he said. He said that the arrangement now existing in the tire pool prevented service of this sort. Each factory is allotted a certain percentage of production, which, if exceeded, ceases to be profitable. As a result, Mr. de Lisser said that automobile manufacturers frequently had been unable to obtain the particular tire or tires for which they were ready to pay and for which they had a call or a pressing need.

The stockholders in the Ajax Co., Mr. de Lisser says, include the Ford, Mitchell, Maxwell-Briscoe, Reo, Wayne, National, Bartholomew concerns—practically every member of the American Motor Car Manufacturers' Association.

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EVERY PENNY SPENT FOR

FISK TIRES

IS REGAINED A VALUE
BY THE PURCHASER

We believe in giving just a little more in tire quality than any other maker for what you spend; it emphasizes the fact that we are earnest in our efforts to extend to our patrons a "Square Deal."

COMPARE FOR YOURSELF THE DIFFERENCE IN QUALITY BETWEEN FISK TIRES AND THOSE OF OTHER MAKES.

They actually cut your tire expense in two, doing away with all exasperating "tire troubles," and turn drudgery into uninterrupted pleasure.

Our methods of handling Fisk Tire users will appeal particularly to those who appreciate a "Square Deal."

THE FISK RUBBER COMPANY, Chicopee Falls, Mass.

BRANCHES

NEW YORK, 754 Seventh Ave.
BOSTON, 226 Columbus Ave.
SPRINGFIELD, 40 Bridge St.
PHILADELPHIA, 138 N. Broad St.
MINNEAPOLIS, 704 Henepin Ave.
ATLANTA, 103 N. Pryor St.
SYRACUSE, 423 S. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 318 Euclid Ave.
LOS ANGELES, 1034 Main St.
DETROIT, 254 Jefferson Ave.
CHICAGO, 1251 Michigan Ave.
KANSAS CITY, 1330 Main St.
ST. LOUIS, 3008 Olive St.
SAN FRANCISCO, 114 Second Ave.

YOU CAN DEAL WITH US FROM A DISTANT POINT THE SAME AS AT THE FACTORY.

CADILLAC UTILITY

THE SINGLE CYLINDER CADILLAC
Will climb any hill that any automobile will climb.

THE SINGLE CYLINDER CADILLAC
Will travel any road that any automobile will travel.

THE SINGLE CYLINDER CADILLAC
Will travel as fast as anybody ought to ride.

THE SINGLE CYLINDER CADILLAC
Costs less to operate. Costs less to Maintain.
Requires less attention than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined, and won for them the unquestioned distinction of

AMERICA'S LEADING MOTOR CARS.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JANUARY 13-20, 1905

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THE

NEW YORK

SHOW NUMBERS

of

THE MOTOR WORLD

Will Bear Dates

January 11th and 18th.

As always, they will deal with the subject intelligently and well and be thoroughly representative of the industry.

Little Things of Large Influence.

That it is the little things that count, practically every man who has had to do with motor cars is well aware. Generally speaking, the large ones take care of themselves.

The little hooks, pins, bolts, nuts and terminals are the things that often are at the bottom of a lot of vexation that entails both labor and expense; indeed, the loss or breakage of any one of them have caused grievous mischief, as witness, the recent fatal accident on Long Island, due to the loss of a nut from the steering gear of a foreign car.

There are many American manufacturers who have appreciated the importance of such things and made use of such nuts and bolts as add to the security of the whole machine. There are more of them who have done nothing of the sort, and who should lose no time in taking steps in that direction.

Despite their great concrete importance, it is in the nature of man to overlook these things and devote attention to the large things and to give but perfunctory notice to the apparently more trivial details. The hooks, pins, nuts and bolts are in this category.

It is a state of affairs that makes it incumbent on manufacturers of machines capable of such speed as automobiles are capable of to afford the fullest possible security. This is no brief for any particular device or devices, but if there are to be had nuts, pins, bolts or hooks that afford more security than those of common employment, common sense should dictate their use. It is a pennywise policy that causes eyes to be closed to the fact.

To our personal knowledge, the accident on Long Island which we have cited, was directly responsible for the loss of the sale of at least one $5,000 car. It frightened the family of the prospective purchaser. How many other families were similarly affected there is no means of estimating, but it is fair to assume that their number is not inconsiderable. Every accident to a person of prominence exerts that deterring influence. Business instinct, therefore, if nothing else, should inspire the use of every reasonable device that will tend to reduce the calamities that return to the injury of every one engaged in the industry.

The Question of Convertability.

Not every man who can afford to maintain a good touring car finds that his income covers all the conveniences and comforts that are to be had from automobiling at its best. For those who think nothing of maintaining a stable it is merely a matter of the choice of the proper cars, but there are many representing an intermediate class to whom the advent of a system of interchangeable bodies would be a boon.

It is not difficult to picture the many uses to which its owner could put his single chassis. It would be readily convertible into the customary side entrance touring car, which for wet weather could be replaced with a brougham, landaulet or other form of closed body, or with the use of rear deck converted into a runabout or two seated touring car, with ample room for baggage. Then there are the great possibilities that such a system would hold for the man who made use of his car during the week for business purposes.

An English firm is already placing on the market a system of what are termed "sliding, detachable motor bodies." The body is simply slid on to the chassis, inverted L shape retaining rails on the latter engaging a similar device on the body itself, which automatically locks itself in place when shoved "home" in such a manner that there is no danger of the passenger accidentally being goes its way. Further provision for concontinues on. Further provision for convenient handling is made in the shape of four legs running on castors, which support the detachable body at exactly the proper height from the floor for sliding it on to the chassis and permit of it being readily detached by one man without any lifting tackle. All the various forms of bodies are of standard construction and appearance in other respects, and are said to fit so perfectly that it is impossible to detect any difference. This would appear to be a development that is apt to come in for more attention in the near future. It would seem to merit it.

The Second-Hand Problem.

With the advent of the coming year the automobile industry as a whole will practically enter upon a new epoch in its history, and numerous problems that have not made themselves felt to any extent in the past will no doubt become pressing before the selling season is over. Chief among these is the question that each dealer must solve for himself, and that is the matter of taking second hand cars in exchange. Some have taken the step already, accepted it as part of the business, in fact, and took to it from the first as a matter of course. Not so with the majority. They have found themselves face to face with

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it unceasingly during the last two years, but have as continuously evaded it.

It is not difficult to understand the reasons that have been uppermost in causing an adherence to this policy. The most important is that of the departure from catalogue prices that it would necessitate at the outset. Again, a more or less inflated valuation of the car taken in exchange would be necessary in the majority of instances to the closing of the bargain. That such cars would not in one case out of ten bring in the open market the prices that their owners would expect to trade them off for in exchange for a new car goes without saying. This in itself naturally forms the most serious bar to the plunge on the part of the agent.

Certain it is that no manufacturer could for a moment entertain such an idea so that the agent would be compelled to adopt the plan entirely on his own responsibility. Whether the car taken in exchange could always be disposed of at a price sufficiently large to cover the deficit in the selling figure of the new car, as well as the expenses of storage, overhauling and repairing, would not appear to be a certainty despite the perspicacity of the most experienced hand in avoiding pitfalls in the shape of good looking crooks.

Here, again, is another controlling element in the shape of the greatly increased expenses involved in providing room as well as a force to take care of a comparatively large number of cars, none of which is in the prime of condition. A car is never new but once, and such a thing as a second hand car that did not need more or less overhauling would indeed be a rarity. These and other considerations must cause the agent to hesitate before embarking upon such a move. That there will be ample reason for considering it, however, is apparent even now.

The Moral of Morrell's Bill.

Congressman Morrell's bill for the alleged national regulation of motor vehicles is remarkable chiefly as showing the heights to which statesmanship may rise. It is to be hoped that the Pennsylvanian will live long enough to discover what a monumental ass he has made of himself. His measure should, however, serve as a warning to those misguided automobilists who are so ready to suggest or support legislative efforts to revoke for prescribed periods what is and should be the inalienable right to the use of the public highways. Morrell has carried it to its logical conclusion and shown the way to revoke it for all time.

NEW TIRE WEIGHTS AND SIZES

Tire Association Adopts a "Per Wheel" Basis—Figures that will Govern 1906 Guarantees.

The Tire Association has finally made public the weight and sizes on which the guarantees will apply during 1906. They are as follows:

Size.	Weight Per Wheel.
28 to 36x2½	225 lbs.
28 to 36x3	350 "
28x3½	400 "
30x3½	450 "
32x3½	550 "
34 & 36x3½	600 "
30x4	550 "
32x4	650 "
34x4	700 "
36x4	750 "
32x4½	700 "
34x4½	900 "
36x4½	1000 "

For weights exceeding 1,000 pounds per wheel, 5-inch tires and over are recommended.

The weights are without passengers or luggage. In announcing them, to quote one announcement: "It is mentioned solely to avoid wrongful comparions, that foreign tires are usually listed with weights including the luggage and passengers. Proper allowance must be made to arrive at the equality of domestic and foreign made tires."

Local Shows that are Sanctioned.

In addition to the two New-York shows and the one in Chicago, the shows sanctioned by the National Association of Automobile Manufacturers are as follows: Washington (D. C.) Automobile Dealers' Association, Inc., February 3 to 10; Tri-State Sportsman's Association, Detroit, February 12 to 17; Cleveland Dealers Automobile Co., February 19 to 24; Buffalo Automobile Trade Association, March 5 to 10; Boston Automobile Dealers' Association, March 10 to 17; Denver Automobile Show Association, a date in April to be hereafter decided upon.

Nothern to Have Air Brakes.

One of the radical novelties of the new four cylinder Northern touring car will be an air controlled clutch and air brakes, which will be supplied from a large storage tank. They will be entirely manipulated from the top of the steering column, where a secondary wheel will give complete mastery of the gears and clutch. The braking system will be patterned after that in common and successful use on railroads, and the handling of the machine will be correspondingly simple and effective.

Mora, Not Pitkin, the Man.

It is A. H. Mora, and not James M. Pitkin, who intends to build automobiles in Newark, N. Y. There was a confusion in the names. Mora expects to colonize Newark with fifty families and establish a factory that will turn out one car a day. Mr. Pitkin is president of the Newark Board of Trade, and disclaims any mormonistic tendencies.

"LANDED" A LAWYER.

(Continued from page 573.)

my suspicions. We bought the thing on a Friday and accepted it without the slightest demonstration; never so much as moved it from where it stood.

"They promised to give it a thorough cleaning and overhauling between then and Monday, when we were to call and take it away. I gave them a check for it, and hang me if they didn't make me guarantee the endorsement on it. Then I was incidentally and very innocently asked to put my signature to a 'bill of sale'; at least that is what they called it. A lot of fine print on a slip of paper, and I didn't pay the slightest attention to it. I found out afterward it was a sort of release from all claims against them of whatever nature. And I also found out that the ink on my check had hardly time to dry before it was on its way to the bank for certification. They had the money within half an hour of the time we concluded the deal—at least two and a half days before we got the car.

"We called for it as agreed and ran it down to the Long Branch boat, a short distance away. Before we got there one of the tires was flat. That didn't bother me so much as the appearance of the thing—it looked pretty 'rocky,' for they hadn't touched it. Once on the boat my attention was again called to the tires, for, by that time, two of them were flat. In fact, there was only one good tire out of four. I had them pumped up and started off the boat at Seabright landing and hadn't got more than a mile or so away when the thing stopped dead right in the middle of the railroad track—and trains are pretty frequent down there in summer. I was afraid we were in for a wreck, but we finally got past the tracks, and then the car laid down 'for keeps' after less than six miles of running. I took it to a garage down there, but the proprietor said he didn't want to tinker with the batteries, because he said he wouldn't guarantee what kind of a repair bill would be accumulated in putting them into shape; it might be a matter of $100 or it might be more.

"Well, I decided to give it another trial and had the cells charged. We only went a few miles away and started back but didn't get there, for she gave out again at the six-mile limit. That was Wednesday; I telephoned the storage people and they promised to send a man early the next day to look the machine over. I foolishly waited until well along in the afternoon, but the man never materialized, and when I telephoned again they repudiated point blank any promise to do such a thing. I gave them back the car on Friday, just one week after I had bought it and five days after it came into my possession, and brought suit against them for fraud. The action was tried without a jury and the court allowed them until Tuesday last to hand in a brief; it should be a highly interesting document. The judge has fifteen days in which to consider the matter, but I believe it will not take him that long to come to a decision."

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MOTORPHOBE IN CONGRESS

Pennsylvanian Wants National Licences, $50 Fees, $1000 Fines and—But Read his Bill.

Congressman Morrell, of Pennsylvania, has made his bid for notoriety. While other people were talking of a national law regulating automobiles, he proved himself a man of action. On December 4 he distinguished himself by unloading on the House of Representatives a bill that seeks to do that very thing—it will practically regulate them out of existence.

Except as a medium for the advertisement of Morrell, none will accept the measure seriously. It is the same old frothing concoction, the froth being piled on a little heavier, if anything. It requires examination and a license, of course—price, $50—to pass from one State or Territory into another, not excepting Porto Rico or the Philippines, and would revoke for all time the right to use an automobile of any person who had been convicted three times in any court of the land. The additional penalty is a fine of not less than $500 nor more than $1,000.

The bill was referred to the Committee on Interstate and Foreign Commerce, where probably it will slumber long and peacefully. As a choice specimen of what a Congressman can do on occasion, however, it is interesting. Here is its full text:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that on and after the first day of January, nineteen hundred and seven, it shall be unlawful for any person owning or operating an automobile or motor vehicle, whether the motive power of the same be electricity, steam, gasolene, or other source of energy, to operate the same for business or pleasure along the public highways of any State, Territory, or dependency of the United States, or of the District of Columbia, so as to pass from one State into another State, District, Territory, or dependency, or from one Territory into another Territory or State, or from the District of Columbia into any State, without first undergoing a special technical examination as to his ability and power to manage, control, and direct automobiles or other motor vehicles with precision and safety, and obtaining a license or permit to operate automobiles or other motor vehicles between the States from the regular constituted authorities of the United States, as set out in the following section:

Sec. 2. That the Interstate Commerce Commission of the United States shall have power to conduct the examination prescribed by this act, under such rules and regulations as may be required, and shall appoint a technical expert to test the personal fitness, practical ability, and mechanical knowledge of any applicant, owner, or operator of any automobile or other motor vehicle as aforesaid, at such times and places as it may determine. Said technical expert shall be certified by the Civil Service Commission of the United States to the Interstate Commerce Commission, and shall receive a salary of one thousand two hundred dollars per annum and four dollars per diem for expenses while absent from Washington in the necessary discharge of his duties.

Sec. 3. That every owner or operator of any automobile or motor vehicle passing a satisfactory examination before said technical expert shall be licensed by the Interstate Commerce Commission to operate automobiles or other motor vehicles between the States and Territories, District of Columbia and the States, or vice versa; and such license shall be good for three years from the date of its issue, and may not be renewed without examination.

Sec. 4. That every owner or operator of any automobile or other motor vehicle who shall pass the required examination shall, before receiving his license or permit, pay into the Treasury of the United States the sum of fifty dollars.

Sec. 5. That whenever it shall appear that any owner or operator of an automobile or other motor vehicle, so licensed as aforesaid to operate automobiles or other motor vehicles between the States, has been convicted on three several occasions in any Federal, State, or municipal court of violating this act, or any State or municipal law governing automobiles or other motor vehicles, the Interstate Commerce Commission shall, after proper notification, cancel and revoke the license of said owner or operator and shall not reissue the same.

Sec. 6. That any owner or operator of any automobile or other motor vehicle violating the provisions of this law shall be fined not less than five hundred nor more than one thousand dollars, to be recovered in any district court of the United States in the district where the violation occurred.

Sec. 7. That this act shall take effect from and after its passage.

Jerseymen Want to Dig Ditches.

Another fool bill may be expected to crop out in the next session of the New Jersey Legislature. Residents of Centre Township, down in Gloucester County, will petition the Assemblymen of that section to introduce a measure to allow the use of gutters across the pikes a mile or less apart. That is their happy solution to the so-called "scorching" problem.

Gates Gets a Mileage Cup.

For driving his car 7,531 3-5 miles and sending a postcard from every town he passed through, Fred C. Gates, a member of the Cleveland (Ohio) Automobile Club, has been awarded the mileage cup "hung up" by the organization. Gates also won the "longest run" cup. His tour comprised a roundabout journey from Cleveland to Chicago and return.

Topeka Exacts its Little Tax.

Topeka, Kan., now has an automobile ordinance. It provides for a yearly registration fee of $1 and the display of one license number on the rear of the car. Speed of from six to sixteen miles an hour is allowed. The penalty for violation of any section of the ordinance is punishable by a fine of from $5 to $50 upon each conviction.

BOSTONIANS GROW BRAVE

After Long Suffering, Owners' Finally Organize and May Really Oppose Persecution.

The Automobile Owners' Association is being formed in Boston. Its purposes are twofold: (1) To fight in the courts all complaints for alleged overspeeding, and to appeal such cases where proper; (2) to exert the association's influence toward proper running of automobiles, in order that the prejudice now existing against automobiles may be lessened.

Members will be expected to report all cases of reckless or unlawful driving to the association, which will use its power to prosecute such cases.

All cases of arrest for alleged "overspeeders" by members, it is claimed, will be taken up by the association, a lawyer having already been engaged. Where practicable these cases will be appealed, as in this way the fine money, if collected, will go to the county instead of to the town where the arrest is made. It is hoped by this method to do away with the arrests made "for revenue only."

At present the association has no plans in regard to automobile legislation, though it is likely that later in the year this subject may be considered by the members, with a view to appearing before the legislature, if such a course shall seem advisable.

The membership of the association is to be made up from among owners of automobiles in "good standing." It is to be in no sense a business or racing association.

Frederic Tudor has been elected president and J. M. Graham treasurer. The other officers are to be selected when plans are fully consummated.

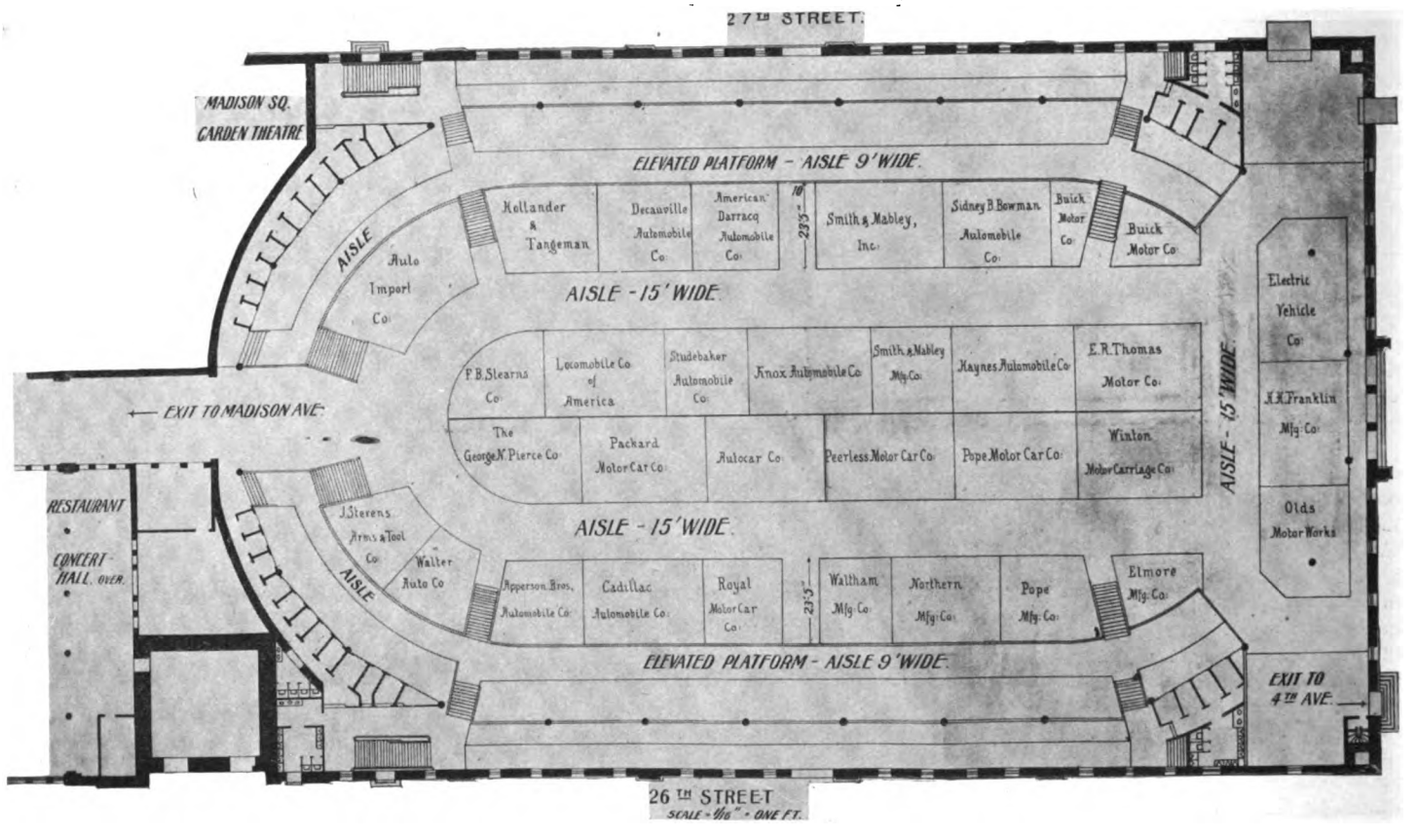
Philadelphians to Fight Local License.

Philadelphia is now having the same difficulty over its license law as was experienced by Pittsburg some time ago. The Automobile Club of Philadelphia and the Philadelphia Automobile Dealers' Association maintain that the new State law which goes into effect January 1, 1906, supersedes all local ordinances regulating motor cars, and naturally the officialty hate to lose the source of revenue from the sale of license tags.

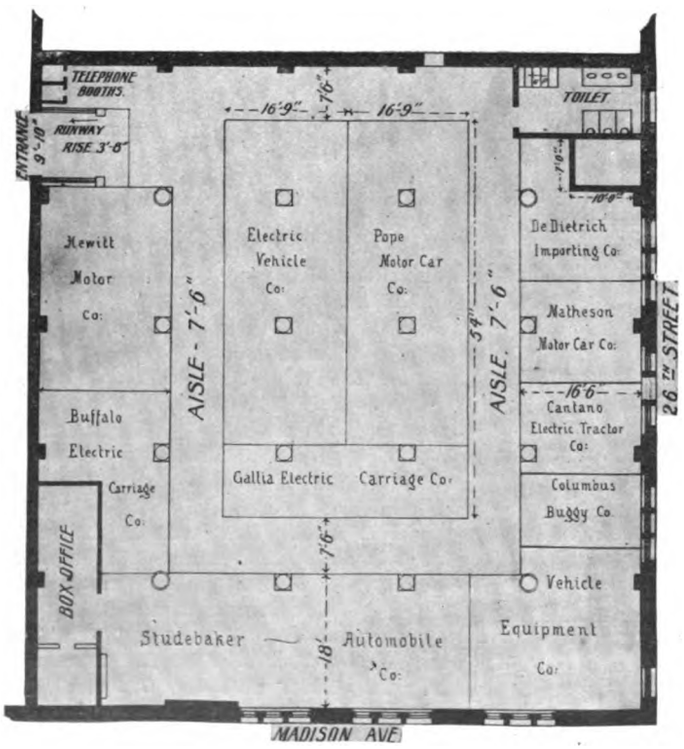
To test whether the city of Philadelphia has a right to mulct motorists an amicable suit has been instituted. Counsel for H. Bartol Brazier, Charles S. Wurts, Jr., and Samuel Y. Heebner last Saturday filed a bill in equity in Common Pleas Court enjoining the city of Philadelphia, John Weaver, Mayor; Sheldon Potter, Director of Public Safety; John M. Walton, City Controller; John M. Lukens, Chief of the Bureau of Boiler Inspection, and Henry R. Schoch, City Treasurer, from enforcing the ordinance of December, 1902, averring that it conflicts with and is superseded by the act of Assembly of April 19, 1905.

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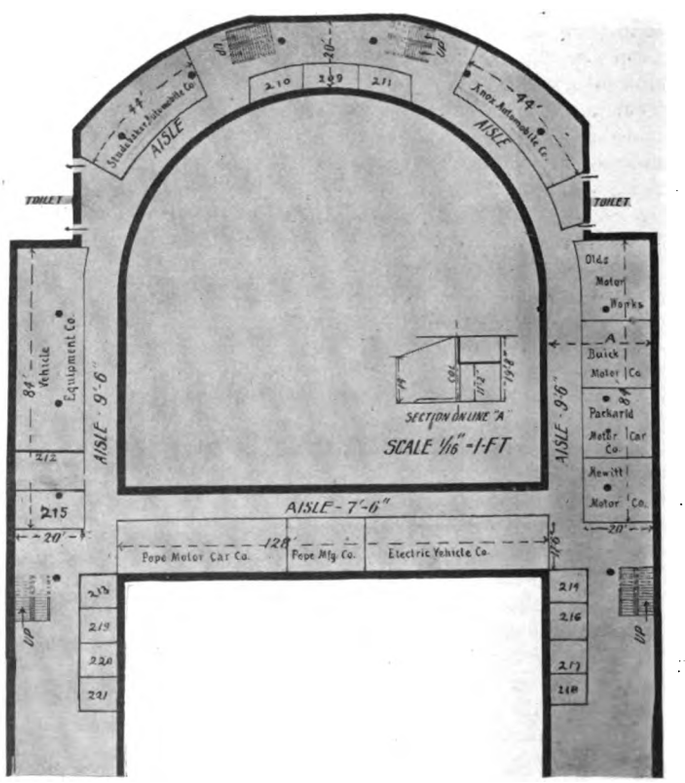
Allotments for the Madison Square Garden Show.



ARENA FLOOR.



EXHIBITION HALL.



BASEMENT.

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PARIS LAMPOONS LONDON

Exclaims "Pooh!" Regarding its Show and its Products—Criticism Full of Instruction.

Paris, Dec. 1.—The Olympia Show in London is over. Opened with a great flourish of trumpets, it was to knock the wind out of the Paris Salon by showing, for the first time, all the novelties of the coming season, and incidentally to prove to the world that the British industry has at length taken its stand on the same plane as that occupied by what has always been regarded as the leading automobile country. Now that we have had time to digest the show, it really does seem as if there has been a little too much bombast about the Olympia gathering. No doubt it was a great success. The British public went there prepared to make it a success, for who could venture to say a word detrimental to the show when that puff agency, the British Empire Motor Trades' Alliance, had dinned it into the ears of people that the British motor industry was striding ahead and that the Olympia show was to be the biggest and most successful that the world has ever seen?

WHY THE SHOW SUCCEEDED.

The truest impressions of a show are those which come afterward, when we are no longer influenced by the glitter and the bewildering variety and number of exhibits. It is then that we can cast back our minds and see just where the show succeeded and where it failed. It succeeded because it drew enormous crowds, and was highly interesting for people whose knowledge of automobiles is not yet sufficiently thorough to enable them to "pick holes" in the cars exhibited. They were quite content with the assurance that Olympia represented all that was best in motor construction, and were ready to spread themselves out in eulogies accordingly.

The show certainly proved that the British industry is making headway, and will before long be quite capable of supplying the home needs in motor vehicles. But when we come to look into the details of the cars we find that they are singularly barren of anything which may point to a technical advance in motor construction. It is true that there was plenty of variety at Olympia, more so perhaps than we are accustomed to see in Paris, but this same variety may be regarded as a source of weakness, although in some respects it may not be without a beneficial influence upon the industry. If we are to believe that the standard types of mechanism are the survival of the fittest, and that nothing better can be devised until we can get a more elastic gasolene engine that will dispense with the change speed gear, then the variety of systems shown proves that the majority of makers are still groping their way forward in the same way that was done by the French makers five or six years ago. At that time the Paris Salons were even more remarkable for their novelties and freaks than the Olympia gathering is now. These many departures from standard practice are no longer to be seen at the Paris exhibitions for the reason that makers have experimented with them and found them wanting, and the trade has consequently gone solidly in favor of the standard type of chassis; but at Olympia manufacturers are still turning out all sorts of vehicles, though it must be admitted that the number of novel chassis was much smaller than in previous years.

NOT SNEERING, BUT—.

Are the British manufacturers on the right track in building vehicles with a variety of motors and driving gears? We should not like to fall in line with the French and sneer at these attempts to break away from standard practice on the plea that it shows a want of experience on the part of those who are making them. It is true that the experiments with horizontal engines and the like have been heart breaking failures in the past, and that nothing has been introduced which can compare with the vertical engine and standard transmission for the touring carriage, but it must be remembered that all the experiments have been carried out in the past when makers had less experience of automobile construction than they possess now, so that it is quite possible that better results could be obtained with these despised mechanisms in the light of a fuller knowledge of automobile mechanics. Nevertheless, everything goes to show that the standard mechanism represents for the moment the final type, although it is very probable that the ingenuity being displayed in the designing of original chassis, which are merely revivals of old systems, may eventually find a considerable application in the lighter descriptions of vehicles.

WHAT EXPERIENCE HAS TAUGHT.

In England, as elsewhere, all the makers who have had a long experience of motor car construction have settled down to the prevailing types, which have indeed proved the turning point in their careers, such, for example, as in the case of the Wolseley, whose productions now vie with the best turned out anywhere. There consequently has been a gradual reduction in the number of horizontal engines, of which there are now only a few examples, the most noteworthy being the Arrol-Johnston, with its opposed cylinders and rocking shafts, which would probably be regarded as very much out of the fashion if it were not for the striking success of this vehicle in the tourist trials. The makers themselves do not seem at all certain that this will be their permanent type; this at least is what we gathered during an interview with them. Then there is the James & Browne, with its four cylinder horizontal engine and long connecting rods to a crankshaft gearing direct on to the countershaft by spur wheels. There are one or two others, including a small car which has evidently been inspired by the Oldsmobile, and, being intended for small powers, this is the only type of vehicle with horizontal engine which seems likely to meet with any success.

Coming back to the standard mechanism, the material and workmanship put into some of the British cars must be pronounced as very good. We were particularly struck with the Rover engine, of which the four cylinders are in one casting. This was a very fine example of foundry work. The French C. G. V. engine also had the four cylinders in one casting, and there are signs indeed that we are coming back to this system of engine construction which was abandoned for the now almost universal separate cylinders on the score of economy. With the engines cast in one piece there is obviously a good deal of unnecessary scraping in the event of flaw, but, on the other hand, they allow of an easier and more accurate adjustment, so that what is lost in one way is more than gained in another. The adjustment of four separate cylinders on the crank chamber is by no means an easy matter.

CRUDITY IN DETAILS.

It is when we come to look into details of construction that we find how far the British makers are behind the French ones, with but few exceptions. In this country the details are worked out with a patience approaching genius, but nothing of the sort was observable on most of the British cars at Olympia, where some of the makers displayed their carelessness or ignorance in a really marvellous manner. What, for instance, can be said of a maker who transmits his braking power from a hand lever on the right to a drum on the off side driving wheel through a cable passing round pulleys, whereby only about one-tenth of the power applied to the lever is exerted on the drum? This shows want of thought and attention to detail which are the real secrets of success in motor car construction. The explanation is probably to be found in the fact that many people have gone into the motor car industry who are not engineers, and copy the main lines of current design without being able to work out the details; but it is nevertheless strange that such flagrant errors can be committed in an industry which has already developed so considerably. On the other hand, we can point to such firms as the Simms Mfg. Co., Daimler, Napier and others whose cars will challenge comparison with those produced anywhere.

ABOUT SIX CYLINDER CARS.

One of the trump cards turned up at the Olympia show was the six cylinder engine. A lot has been said about the advantages of the six cylinders as if it were something startlingly new and was going to knock foreign competition into the proverbial cocked hat. This, of course, has been engineered by the irrepressible S. F. Edge, who has been feeding the public with all sorts of pabulum about "constant turning force," "elasticity" and the rest of it whereby the variable speed gear will be suppressed altogether. The six cylinder engine is, of course, smoother than the four cylinder, which, however, is quite good enough for all ordinary purposes, and it has yet to be seen whether the little extra advantage in the way of smoother running is

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Where the A. C. A. Show Will be Held.



69TH REGIMENT ARMORY, NEW YORK; MA--SON SQUARE GARDEN IN RIGHT BACKGROUND.

going to outweigh the added cost and complication as well as the increased room taken up by the engine. We doubt very much whether the six cylinder engine will have much vogue, even in England. Finding that an attempt was being made to popularize this type of engine, Panhard & Levassor sent a six cylinder car to Olympia. This has been made solely for British consumption, and the firm does not intend to show it at the Paris Salon.

Leaving the shows for the moment, the reference above to the adaptability of different types of mechanism to small cars brings us to the tests of voiturettes which have been carried out in the neighborhood of Paris during the last week. By giving themselves up too exclusively to the high priced vehicle the French have allowed themselves to get a long way behind in the building of popular cars, in which they have been surpassed not only by America, but also by England.

Owing to the almost unlimited demand that would be expressed for popular vehicles if only suitable types were placed on the market, several leading makers are now giving attention to this branch of the industry, and one of the Paris journals has endeavored to prove to the public the reliability of the voiturette by organizing a voiturette test in which the vehicles had to cover stages of 150 miles in six consecutive days at a minimum average speed of fifteen and one-half miles, while those coming successfully out of this ordeal were tested for speed and hill climbing over kilometre courses. The contest was carried out under deplorable conditions of weather, with a fall of snow followed by heavy rains. The roads in places were scarcely passable, and the only way of running safely was by using non-skids on the tires. Of the twenty-two entries there were thirteen starters. The weight of the chassis was limited to 500 kilos., and the engines developed about 6 horsepower. With the exception of the Hugot car, which had belt transmission and was soon put out of the contest by overturning in a ditch when trying to avoid collision with a cart, all the voiturettes followed very much the standard pattern of mechanism. They all had single cylinder engines, with the exception of the Grefoire, which had two cylinders, and the propeller shaft was universal except in the case of the Gladiator, which had chain transmission.

The voiturettes ran very satisfactorily, and only four were put out of the running by accidents of various kinds, whereby they lost so many marks that the drivers found it hopeless to continue. One of the Lacoste & Battmann cars was leading up to the last day but one, when it fell in the rear through repeated tire punctures. On the last day the trials threatened to collapse altogether, for between Paris and Mantes the competitors punctured with such singular frequency that an investigation was made, when it was found that they had all been picking up nails obviously manufactured for the express purpose of doing execution on the pneumatic tires. Made of thick wire, they were bent in such a way as to insure the sharp pointed end sticking upward. A collection is being made for the offer of a big reward to whoever will give information as to where these nails were made. The punctures naturally completely falsified the results of the tests, and as the judges would not take upon themselves to decide whether the run between Paris and Mantes should be neutralized, the matter has gone to the sporting commission of the Automobile Club of France. Whatever decision is come to there is bound to be a lot of protests from those who find themselves put down in the placings. The reliability trials this year have been very unfortunate, and the task of those who organize them is no sinecure.

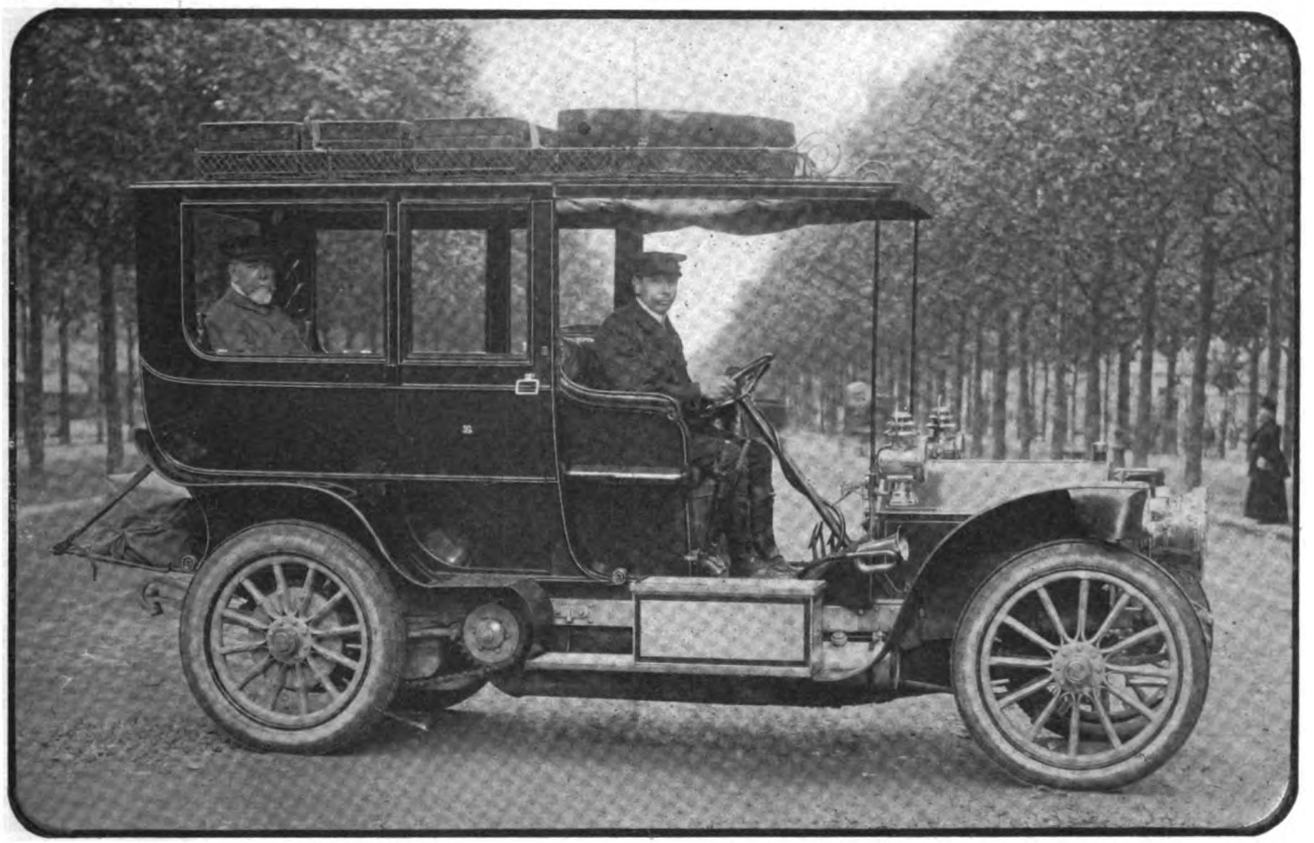
If the commission does not annul the run between Paris and Mantes the final placings will be as follows: Vulpes (Barriaux), De Dion (Liniol De Dion), De Dion (Cromier), Lacoste-Battmann (Gachet), De Dion (Bardin), Gregoire (Taveneaux), Lacoste-Bottmann (Rochay), Lacoste-Battman (Thomas), Gregoire (Renonce). The regularity prize goes to the De Dion-Bouton team,

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KING COPIES KEARNEY'S CAR

American's Conveniences and Ideas of Comfort that Appealed to His Majesty.

It is not often that an American citizen sets a fashion for the King of the British Empire, or of any other empire, but something of the sort has been done by M. Theo. Kearney, president of the California Fruit Growers' Association.



M. THEO. KEARNEY IN THE CAR OF HIS OWN DESIGN.

Mr. Kearney is an ardent automobilist, and spends a portion of each year in Europe. His touring experiences led him to design a body for his own car, a Mercedes, which, after some effort, he had built by Hooper & Co., of London, for sixty years coach builders to the royal family. When Mr. Kearney's car was brought to this country in December last the Motor World pictured and described it—a service that attracted no small notice. The body, which was of the limousine type, was uncommonly well thought out—so well, indeed, that Hooper & Co. have built what is practically a duplicate of it for his majesty.

Mr. Kearney's car, ready for the road, with the load on the roof evenly distributed and with that gentleman seated within, is shown by the accompanying illustration. In designing it the Californian's chief idea was to obtain a limousine body for all seasons' use—that is, one that would afford practically an open or closed car, as fancy or the weather willed. To this end the windows were made as large as possible, having due regard for the weight of the roof, and instead of being swung on hinges they were made to slide out of sight into pockets, as in the case of carriages and railway coaches. This permits them to be quickly raised without stopping the car or calling the driver when dust or a shower is encountered. Mr. Kearney also devised wooden shutters akin to those used on four-in-hand coaches, and similarly operated. They slide down alongside the glass.

Primarily these shutters were designed for protection from broken glass in case of accident when travelling at speed, but his tour of Europe last summer convinced Mr. Kearney they reach much further. They assisted in keeping out the dust, enabled the force of the air to be regulated and afforded agreeable protection from the sun, which so often strikes the neck or side of the face for hours at a time. In cold weather also the shutters afford air without a discomforting rush being felt. As the shutters in the large side windows are made in two parts, each part sliding up or down independently of the other, convenience in meeting all conditions is considerably increased. There are spring side curtains for the protection of the driver.

Mr. Kearney's car is provided with four seats inside, all facing forward. The two in front are removable, and when not in use may be folded and stored under the rear seat. The seats are all finely upholstered and slope backward, which makes for real comfort. There are three electric lights inside; also large pockets to hold maps and books, a timepiece, a speedometer and Mulbacher's push electric indicator, giving the signals, "Faster," "Slower," "Right," "Left," "Stop."

The luggage rail running the full length of the roof is also an item. It permits the suit cases and spare tires to be evenly distributed, and thus relieve the rear tires of undue weight. There also is a luggage rack on the rear of the car. The two headlights are arranged with a purpose. One, with a powerful lens, projects the light far ahead; the other lights up the road immediately in front of the car.

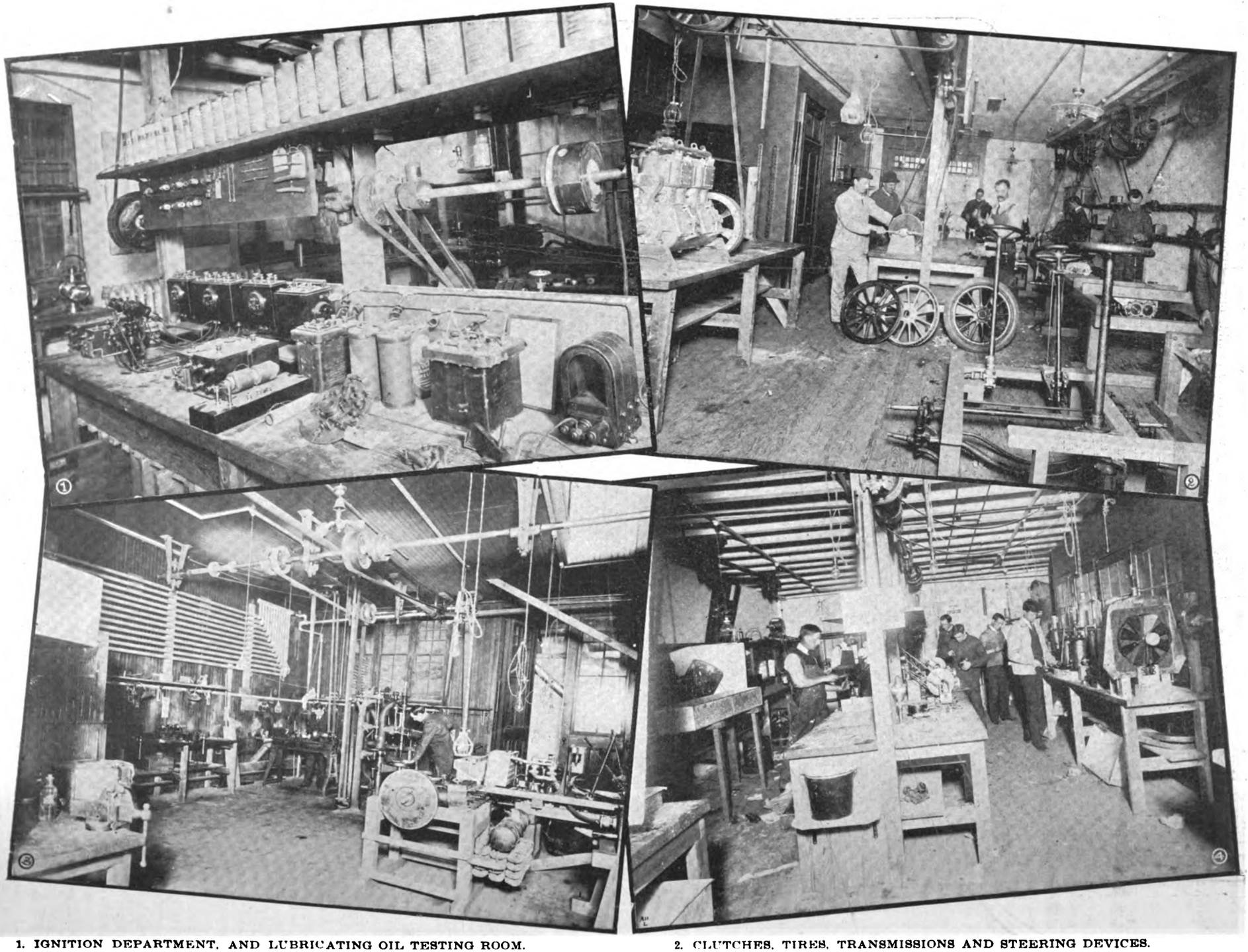
How the Car Was Frozen Fast.

They tell a story of a motorist who, being obliged to abandon his car for the night in a barn having a dirt floor, was at considerable pains to drain all the water from the cooling system and went away firm in the conviction that even though the thermometer might drop out of sight before morning he need have no fear for the safety of the machine.

His disgust when on coming back in the morning he discovered that the wheels had sunk even to the rims in the soft earth during the earlier hours of the evening, and then had frozen there, was profound and explosive. It required two hours of hard work, first with an old axe and then with a lot of hot water lugged from the nearest farmhouse, to get them clear again, and then he found that several sections of the tread had been torn off the shoes. Thereafter, when he had occasion to leave the machine under similar circumstances, he took care to stand the wheels on planks.

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"School Rooms" in New York's New Automobile Institute.



1. IGNITION DEPARTMENT, AND LUBRICATING OIL TESTING ROOM.
2. CLUTCHES, TIRES, TRANSMISSIONS AND STEERING DEVICES.
3. REPAIR AND MACHINE SHOP.
4. CARBURETTERS AND COOLING DEVICES.

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TEACHING THE OLDER IDEA

Not How to Shoot, but All About Automobiles—New York's New School.

Without any flare of trumpets or other formalities than welcoming the forty-two scholars who comprise the pioneer day class, the New York School of Automobile Engineering began it first session promptly at 8 o'clock last Monday morning. The institution is housed in the building at 146 West 56th street, where it occupies all the space available, the various departments being distributed over three floors. In its entirety it is safe to say the new school not alone represents the most complete plant ever collected and installed under one roof for this purpose, but its curriculum is a more ambitious attempt at thorough-going automobile education than has hitherto been undertaken in this country.

Instruction is divided into three courses, day, evening and a special course for the benefit of owners of a car, the tuition fee being the same in all cases, viz, $75. The day course consists of eight hours' instruction daily for two months, beginning at 8 a. m. and ceasing at 5:30 p. m. every working day in the week. This is divided into short periods, a full day's work being apportioned about as follows: First session, lecture; second, shop; third, carburretion; fourth, ignition; fifth, transmission. This arrangement is adhered to for three weeks, the subjects being taken up in varying order from day to day in such a manner that the student receives four sessions on each during the course of the week. At the end of this time the order of instruction is somewhat changed, the periods of lecture and shop work being retained and the subjects of motors, general car construction and tests being substituted. Upon the completion of these two indoor terms the pupil rounds off his education by taking the wheel. In order that the novice should not run amuck to the annihilation of innocent pedestrians or wagons, he is confined for a week to the secluded stretches of the Morris Park racetrack. But before being allowed out of doors at all he must show that he is able to manipulate ignition and control as well the change speed levers without becoming confused to the extent of losing sight of the necessity for steering at the same time.

This part of the instruction is carried out by mounting the car over a pit containing a rope brake apparatus. This relieves the beginner at the wheel of the duty of steering so that his mind may be free of the responsibilities of avoiding other traffic while being inculcated into the subtleties of gear changing, as well as the niceties of spark advance and throttle control. Having demonstrated his efficiency here he graduates to the racetrack, not to show speed, but his ability to add the care of the steering to the duties already mastered. At the end of this primary initiation into the mysteries of tooling a car round the oval track he is then transplanted in the same guise to the haunts of the maddling crowd and must show that he is master of all the functions of the car where traffic runs in every direction at the same time and absent minded pedestrians and trolley cars are ever looming up in such a nerve racking manner. Having accomplished this much he is entitled to all the honors the school can confer, which consist of a certificate recording the fact that he has successfully passed the prescribed courses, taken the examinations and is a fullfledged chauffeur. That this will amply compensate him for the time and money expended will be apparant, not alone from the thoroughness of the course, but the fact that the school is backed by men prominent in the trade so that the future of the competent graduate should be assured.

The lectures consist of an introduction to mathematics sufficient to enable him to figure horsepower, gear ratios and the like, together with elementary electricity and mechanics. The lecture room and office are located on the third floor of the building. On the floor beneath this are departments fitted to illustrate the principles of transmission, carburretion and ignition, including facilities for carrying out tests of lubricating oils. In the first division there are several chasses bolted to the floor with the transmissions exposed. One chassis likewise has the engine attached; this has been opened sectionally to reveal its interior working. All are arranged so as to be run by belts from the line shafting and the instruction connected with them is gained from a study of their operation in action, assisted by manipulations of the change speed levers. This principle is, in fact, carried out in every department. For instance, standard types of carburretters are connected up with exhaust blowers to produce the necessary suction for purposes of testing, the character of the resulting mixture being shown by burning it in a crucible. Various forms of cooling devices are likewise tested in actual use, the water being heated to the temperature that it would attain from the running of the engine, by means of gas stoves and the cooling effect of the motion of the car being simulated with the aid of blowers. In both this and the ignition department the student applies his recently gained knowledge of elementary principles and supplements it with practical demonstrations of all the standard systems and forms of apparatus, under the guidance of an instructor.

The ground floor is devoted to the machine shop, which is equipped with all the necessary tools driven by power, including an air compressor. Several more complete chasses are here, as well as separate motors and instruction in this branch will take the form of dismounting and reassembling their constituent parts, as well as in the making of all repairs required, which will be carried out by the students. Among the chasses in this part of the equipment are an old Searchmont, a Gasmobile and an ancient Daimler, and while the school's stud will number several modern cars of approved make, it is the intention of the management that the pupils shall gain their knowledge through handling cars that are prone to fall ill with all the complaints that the automobile is heir to. When on the road it will be up to the would-be chauffeurs to bring these old timers back under their own power and it goes without saying that knowledge gained in this manner should form a resource that will be a practical guarantee against being stalled by anything short of something requiring the facilities of the shop to make good.

On the same floor is located the pit containing the brake apparatus and in addition to using this for instruction purposes, it will be constantly employed for making efficiency tests, showing the consumption of fuel, oil and water, as well as for percentage of power delivered to the road wheels. Horsepower tests will be conducted with the motors alone. It is not intended to touch on the subject of dynamics in connection with these performances, as it is not alone something beyond the average chauffeur, requiring knowledge of higher mathematics, but because it would be of little or no practical use to him.

The evening course in which there are at present sixteen scholars, includes the same course of instruction and is conducted from 7:30 to 10:30 each evening, extending over a period of four months. In addition to this there is a special course for owners, the entrant being permitted to take the entire curriculum if he so chooses or select his study. In either case he may attend whenever convenient and is assigned special instructors. Of the baker's dozen of owners already enrolled few have gone in for more than one or two branches, the favoriate naturally being carburettien and ignition. As yet a time limit has not been set on this course, the student being allowed to drop in and make his instruction in installments whenever the mood strikes him or business permits.

Value of Presence of Mind.

Presence of mind is probably the most valuable asset of the good chauffeur. A striking illustration of what may be accomplished by the clear, cool headedness that sums up the requirements of the situation at a glance and does the right thing at the right time comes from Chicago, where but for the timely action of a chauffeur a garage and eleven machines would have gone up in smoke. He was making adjustments to the motor of a car when some gasolene blazed up, burning his hands. At his feet was a five-gallon can of the fluid, and this he hastily removed to a distance and returned with a chemical extinguisher, which proved of no aid. He then started the engine, burning himself more severely, but in spite of this managed to drive the car out into the street. The fire department responded in time to make a good job of it, leaving the car a total wreck.

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REO CREATES A COUPE

Which also May be Converted into a Touring Car—Some of its Characteristics.

In accordance with the present overwhelming demand for the closed type of vehicle body the Reo Motor Car Company, Lansing, Mich., has added to its line a model, to be known as the Reo coupe, which embodies all that is to be desired in the way of a limousine body, while maintaining those characteristics of light and shrewd design which already have done so much to put the firm name on the list of public approval. The coupe follows the general lines of the horse drawn depot carriage, being somewhat on the order of the true limiosine, yet lighter and less cumbersome than that vehicle, and accordingly better adapted to the type of chassis for which it has been designed. The latter is presented to the market as the standard member of the Reo family for 1906.



REO 16 HORSEPOWER COUPE.

The frame is of pressed steel, excellently put up and suspended on elliptical springs, those in front being of the semi-eliptic pattern, while the rear equipment is of the full type. Tubular axles are used, the wheels running upon roller bearings of approved construction. They are of the artillery pattern, built of wood, and run on 30 by 3½ inch tires. The motor is of the horizontal opposed type, having 4¾ by 6 inch cylinders, cast with water jackets integral. Both valves are mechanically operated and are thoroughly protected from external derangement. The carburetters are of the latest design of R. E. Olds, one being used for each cylinder. Ignition is by the jump spark method, two sets of dry battering being furnished to supply the necessary primary current. The cooling of the motor is accomplished through the medium of a tubular radiator, circulation being maintained by means of a gear driven pump. The rated output of the power plant is given as sixteen horsepower.

From the motor the propulsive effort is carried to the rear wheels through a planetary transmission, driven by a multiple disc friction clutch of novel construction, a distinguishing feature of the gearing being that there are no internal pinions. A direct single drive is supplied to the rear axle by means of a roller chain. Three brakes are fitted, one acting upon the sprocket and the others upon the rear hubs. All are strictly double acting, and the emergency pair is equalized.

The body, which is fitted in most complete fashion, is capable of accommodating two passengers inside, and one outside, in addition to the driver. Although following the general lines of body design as seen in many machines of the present day, it is unique as being adapted to a car of the calibre of the Reo, combining as it does, the handiness of the runabout, in facility of handling through traffic and ease of manipulation with comfort. The occupants are entirely protected at all times, though when driving in warm weather all the windows may be let down into the walls, thereby securing the effect of an open car to all intents and purposes. The body is completely detachabe, thus rendering it interchangeable with the regular form of touring body.

The running radius of the machine is placed at two hundred miles on one charge of the tanks, the consumption averaging from ten to twenty miles pper gallon of gasolene. The facilities for control are characteristically simple, the transmission giving two speeds forward in addition to the reverse, and the steering gear being irreversible. The wheel base is ninety inches, and the tread, the standard for wagon construction, that is to say, fifty-five inches.

The Prophets of 1833.

In an exceedingly quaint prospectus of the "General Steam Coach Company," published in London about 1833, which has been unearthed recently by the Car, and which presents a strong argument in favor of the use of motor traction upon the highways, there appears the following interesting paragraph:

"A select committee of the House of Commons, too eminent to be dishonest, too wise to be duped, after a careful examination of the most distinguished civil engineers, reported 'that Steam Carriages could ascend hills of considerable inclination with facility and safety—that they were perfectly safe for passengers—that they would become a speedier and cheaper mode of conveyance than carriages drawn by horses—that, with the slightest exertion, they might be stopped and turned under circumstances where horses were totally unmanageable—that they would not act so injuriously on common roads as the feet of horses—that the substitution of inanimate for animal power in draught on common roads is one of the most important improvements in the means of internal communication ever yet introduced; and its practicability had been fully established.' The truth of this decisive Report has, since 1831, been most fully confirmed by the performance of several steam coaches upon different lines of road."

The document formed, of course, an eloquent plea to the investor to subscribe to so worthy a cause and to support the establishment of a regular steam coach service upon the public roads. That the effort ultimately came to naught was not so much the fault of the promotors nor of the poor efficiency of the machine then in use, as might be supposed, though those factors might have come in for a share in the downfall. The real cause of failure lay in the lack of perspective in the view of the parliament of the time, which outlawed the use of such vehicles.

The document is particularly interesting in consideration of the fact that mechanical propulsion for road vehicles is often referred to as the growth of a decade.

To Prevent Being Poled.

To the chauffeur who has had the unpleasant experience of having his car ignominiously "poled" by the carelessness of a following teamster in heavy traffic, the device which was recently on view at the London show should be particularly pleasing. This consists of nothing more nor less than a little semaphore on which appears the word "Stop" in large letters, and which is mounted at the back of the car in plain sight of all who are following. It is interconnected with the brake pedal in such a way that ordinarily it is invisible, but when the pedal is depressed it pops into view, warning other drivers of their obligation to slow down.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau street, New York. ***

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CHINESE AS CHAUFFEURS

Where They are the Rule and not the Exception—China Full of Promise.

"China presents a steadily increasing market for automobiles, and the sale of machines of American make has kept pace with the demand," says Special Agent Burrill, writing from that country. "While the purchase of cars to this time has been confined almost exclusively to the foreigners of Shanghai, the wealthier Chinese now regard this mode of travel with especial favor; and as they are well able to afford the luxury, it is safe to assume that the demand will soon extend to them. Chinese drivers of automobiles are the rule rather than the exception here, and this familiarity of the natives with the running of the machine, its speed, comfort and utility is assisting materially in influencing the Chinese in its favor. The roads in and around Shanghai are macadamized and kept in excellent condition by the municipal authorities, money is abundant and conditions are generally favorable to the extension of the automobile business.

In 1900 six or eight steam machines were imported from the United States, but none of them was sold. In 1902 three Oldsmobile runabouts were imported and disposed of, and the next year two French gasolene sliding gear cars were brought over. These machines were of the runabout type and were fitted with De Dion vertical single cylinder engines. A marked increase in the number of cars imported was noticeable in 1904 and 1905, while there has been a greater demand for higher power machines. Several 10, 16 and 20 horsepower machines have been sold and have given good satisfaction. There have been only two English cars of any description imported, and one of these was returned because of its unwieldy size. The comparatively narrow streets of the foreign settlement in Shanghai make the operation of the larger type of cars difficult, if not dangerous.

"While American machines are firmly established on the market and have repeatedly demonstrated their superiority over cars made in other countries, it would be well for the manufacturers of the United States carefully to observe the suggestions which are regarded here as essential to the increase of the sale of American automobiles. These may be summarized under four general heads, and all are necessary to the successful development of trade in this particular line:

"1. Manufacturers should give prompt attention to filling and shipping orders. Unnecessary delays frequently occur which furnish additional cause for criticism of American carelessness and indifference to the demands of the export trade.

"2. Any misrepresentation as to the time of shipment should be scrupulously avoided. Manufacturers should forward the machine on the date promised, as any excuse, although it may be fully warranted by conditions, will be regarded here with suspicion. This is the unfortunate, though unavoidable, result of previous experiences when the shipment of other commodities has been delayed beyond all reason.

"3. Close attention should be paid to the details of the shipment. No car should leave the United States unless its equipment is complete. This caution becomes all the more important because several instances are cited where a machine has arrived in Shanghai and when unpacked discovery was made that the starting handle, crank or some other essential part had been forgotten. This kind of carelessness occasions a long, unnecessary delay and natural irritation on the part of the purchaser.

"4. Freight rates on automobiles are high, both by San Francisco and the Suez Canal, and while it may be difficult to procure any reduction because of the comparatively limited number exported to the Orient, it is suggested that some action be taken in the interest of the trade here looking to cheaper transportation.

"The foregoing recommendations were made to the writer by men here who have carefully studied the situation, and who believe that if they were faithfully carried out a decided improvement in the business would follow.

"The American method of packing automobiles is commended in Shanghai, and is regarded as superior to that of any other country. The wheels are always removed from the body of the machine, and usually the axles, steps and steering gear as well, which are packed separately. This is a decided advantage, as it not only insures greater safety to the car in transit, but decreases the cubic measurement of the case for shipment.

"Although the freight rates on automobiles from the United States to Shanghai are regarded as too high by the dealers here, yet they compare favorably with those from other countries. Insurance rates, however, are slightly higher. The freight and insurance charges on a car laid down in Shanghai amount approximately to $50 gold. The warehouse charges here are the same to all countries exporting automobiles to Shanghai, and are comparatively unimportant, as the machines are usually removed immediately on arrival. A customs duty of 5 per cent on the invoice valuation of the car, including freight and insurance to Shanghai is collected. In Shanghai there are now established two garages, or, more properly speaking, repair shops, and a third is soon to be erected. There is also a club, known as the Automobile Club of China, which was organized in May, 1905, and already has a membership of twenty-two.

"The New York Export & Import Co and a French firm are the only business houses in Shanghai dealing in automobiles, but both regard the outlook for trade in this particular line as bright and worthy of encouragement. While the price of a machine laid down in Shanghai must not be excessive, as compared with its cost at home, with due regard, of course, to the additional expense incidental to importation, the margin of profit is sufficiently large to make the business satisfactory to the dealer."

WHEN THE CAR BACKS DOWNHILL

Manouvre that is Possible and that Makes for Safety—if the Driver Keeps his Wits.

It is getting to be a habit with some people, apparently, to see how near they can come to backing a car through the guard rail of the 155th street viaduct, in New York—without succeeding. In one instance, a machine which had been left in charge of a man who knew nothing about its mechanism slipped its brakes and started down the grade, finally bucking into the railing and coming to rest with two wheels hanging over space. Still more recently another machine climbing the hill snapped a chain and began to slip backward. In this case it would appear that the brakes were not in order, for the car was in charge of a professional chauffeur, who applied the traditional means which are universally prescribed for such occasions and turned toward the curb. The machines jumped the six-inch obstacle without any hesitation and plunged into the rail, only stopping when a good section of the gaurd had been torn away and the passengers thrown into paroxysms of fright by the sight of the 125-foot drop between them and the street below.

It is a habit not to be cultivated. Even the stoutest of railings have their weaknesses, and sooner or later some machine will, likely enough, jam its way entirely through the barrier and somersault to the pavement underneath. Yet it would not be a necessary accident should it ever happen. When a machine begins to back down a grade, the first thought of the driver is for the brakes; failing to check the speeds with these, he naturally turns toward one curb or the other in the hope of stopping in that way, but it is by no means necessary to run into the curb in order to do this on so broad a drive as that at 155th street, for there is sufficient width for the average car to make an almost complete turn without striking either railing. Where this is possible, by far the best plan is for the driver to shear into one side until the wheels touch the curb, and then bring the steering head around so that the rear end is turned uphill and the momentum checked by the grade itself before the other side has been reached. In this way it is frequently possible to get out of an otherwise serious difficulty without in any way damaging the machine or endangering its occupants. To do it, however, the driver must keep his head.

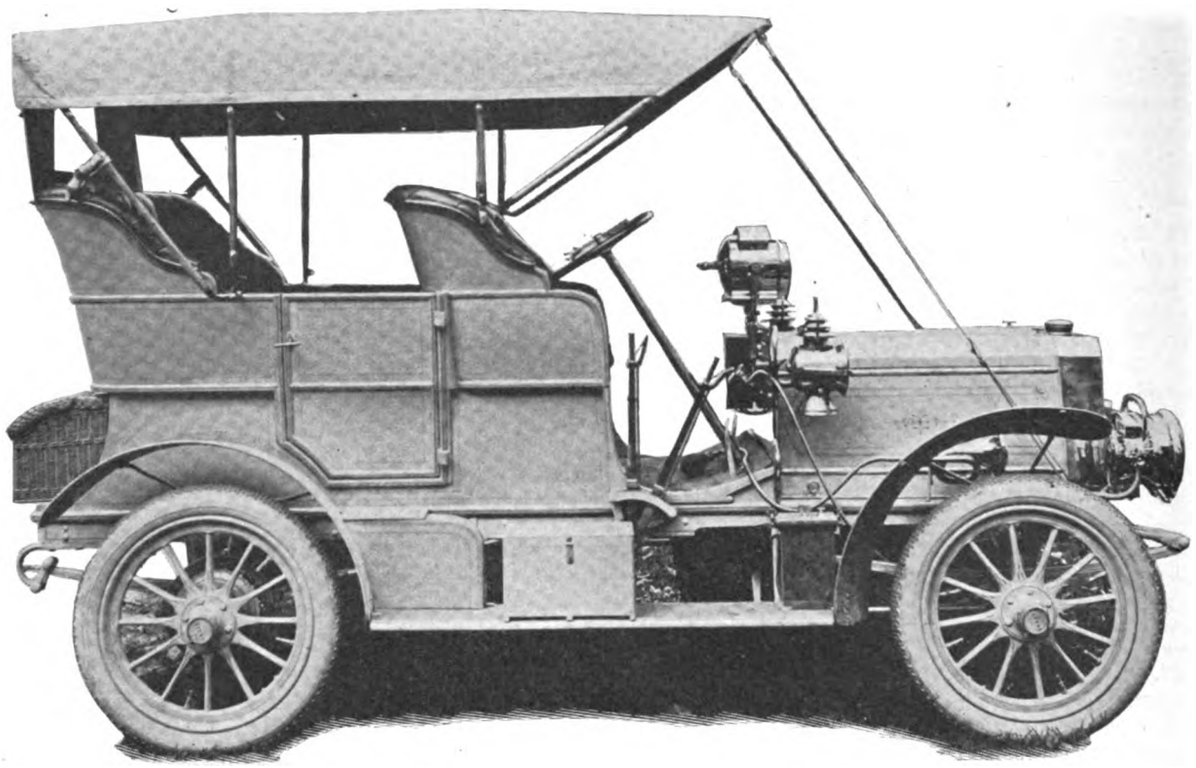
When Appearance is Deceiving.

That the motorist who employs an ebony skinned chauffeur is apt to be misunderstood when he himself undertakes to do the driving was well illustrated recently by rather an amusing incident. The owner of the car was at the wheel with his dusky driver seated beside him, seeing which a woman was overheard to remark to a companion:

"Oh! Jennie. Just look at that nigger with a white chauffeur."

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What Grout has Wrought in Gasolene Cars.



When a manufacturer of steam automobiles turns his attention to the production of a gasolene model one thing is reasonably certain, and that is that he will pay the strictest attention to the production of a car which will be easily and smoothly controlled under all sorts of conditions. Also he is quite likely to do away with vibration as far as possible. When the Grout gasoline car was first presented to the public a comparatively short time ago the public knew just about what to expect. The car which is to be marketed under that name during the forthcoming season of 1906 is essentially a conservative machine, built upon standard lines, with due care and respect for the many little points wherein a car of quality differs from one which is lacking in worth.

Of the four cylinder pattern and rated at 30-35 horsepower, the motor is built to stand hard usage and develope its full power under unfavorable as well as favorable conditions. The valves are disposed upon the left hand side, both sets opening from below, the spark plugs being located over the inlet pockets, and relief valves over the exhaust. The valves are interchangeable. The cylinder castings are cast individually, with the water jackets made integral. In the ignition system, but a single coil is used, the high tension distributor being of a novel pattern which permits of rigid wiring being used. In it, the advance of the spark is obtained by rotating the revolving wiper in advance of its shaft instead of turning the timing box about it, thereby avoiding one of the greatest difficulties of the jump spark system. The lubrication of the motor and as well of the more important portions of the other mechanism is accomplished by a force feed oiler of unique design which supplies a measured quantity of lubricant to each of the various points in turn, from a single pump acting through a distributing valve, which permits of satisfactory working with a minimum of moving parts.

The transmission is of the standard three speed type, giving a direct connection on the high gear. It is of simple and effective design, and not calculated to give trouble of any sort under the severest of service. The single sliding member is mounted on the driving shaft, and meshes in turn with one of a pair of gears on the lay shaft for the two lower speeds, locking with the clutch shaft for the direct drive. The counter shaft is mounted on roller bearings and carries a foot—actuated brake just outside the case. The double chain drive is used.

The frame is of armored wood, liberally strengthened at the corners by quarter inch steel braces, while the power plant is mounted on a channel steel sub-frame. Solid axles are used, upon which the frame is mounted by semi-eliptical springs. The wheels are 32 inches in diameter, carrying four inch tires, and running on ball bearings. A point which has been given special attention in the construction of the machine is that of securing the greatest possible radius of control of the machine by the use of the throttle alone. Both the ignition advance and gas levers are mounted on the steering wheel on a stationary sector which retains them in definite relation to the driver, no matter what the position of the steering gear, and enables him to handle them with an otherwise impossible degree of nicety.

Eccentrics for Valve Operation.

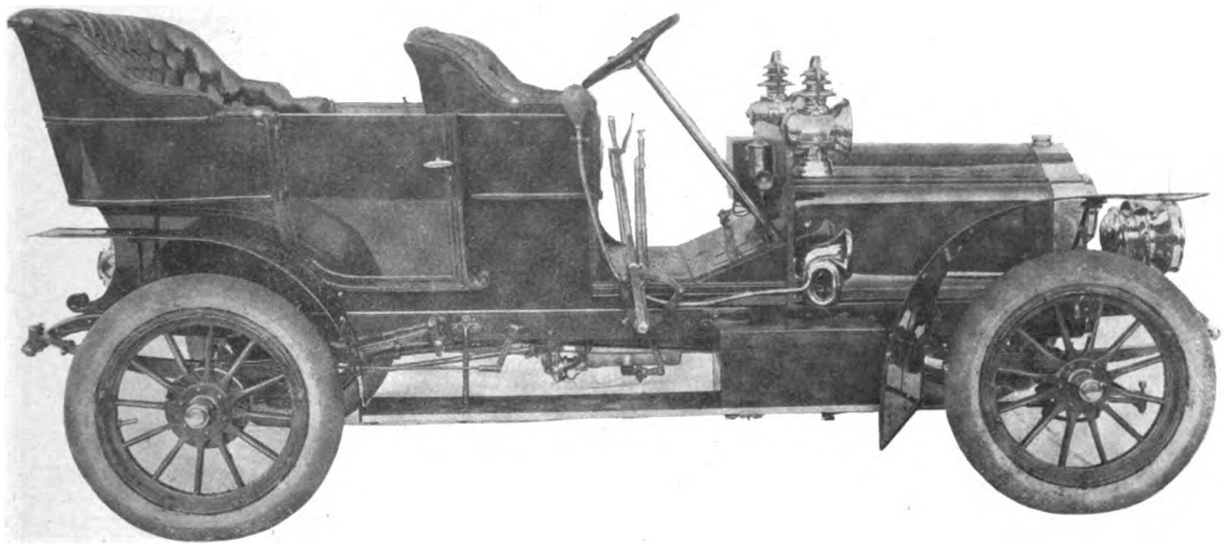
For the most part, the gasolene engine designer is content to construct his motors for continuous rotation in one direction, trusting to a system of gearing to accomplish the occasional reversal which is necessary for the car or boat in which it is mounted. One or two reversible motors have been designed in the past, and several have been constructed which had a trick of reversing unexpectedly under certain circumstances, but both types have been a rarity. Now comes an inventor with a scheme for actuating the valve mechanism by means of paired eccentrics, after the manner commonly employed on reversible steam engines, the regulation Stephenson link being employed. Just how much there is in the idea remains to be proven, but at all events it can be of but little real value until some reasonably certain self-starting device is fixed upon.

To Braze Gray Iron.

For brazing gray iron a process of decarbonizing is resorted to. This is accomplished by the use of exide of copper or some other chemical giving the same result, in conjunction with a high temperature to burn off or otherwise remove the carbon. The process is only continued until decarbonization has been effected to a slight depth beneath the surface, after which the brazing may be done in the same manner as if the material were wrought iron.

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Here's the First Four Cylinder, Two-Cycle Car.

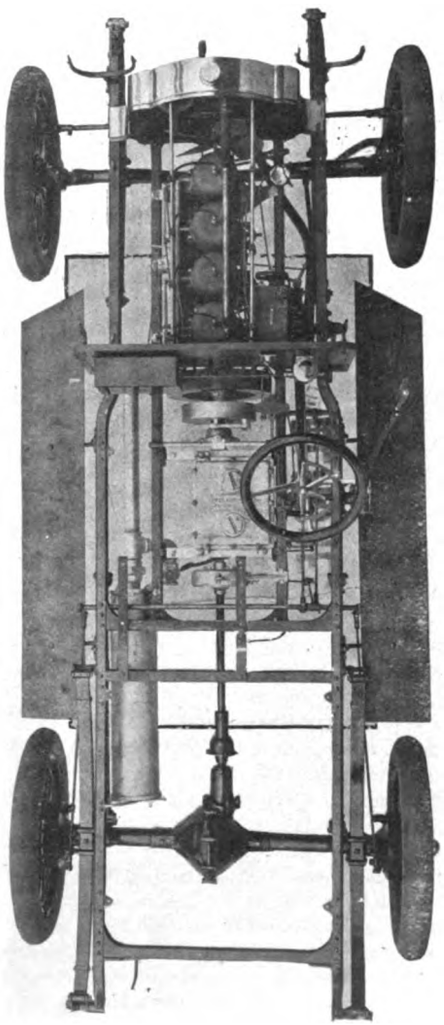


When a visitor at the Garden last January, on being shown the Elmore exhibit, having had the principle of the two cycle motor explained to him for the first time, said, "Now, if you will only build a four cylinder engine you'll have 'em all 'skinned to death,'" he sounded a note of prophecy, it would seem, for this coming "show time" will indeed see a four cylinder Elmore, which is calculated to do just that very thing. For some time the Elmore Mfg. Co., of Clyde, Ohio, has been practically alone in the application of two cycle motors to motor cars. Hence it is fitting that it should be the pioneer in introducing a four cylinder model, and also that they should claim for it the title of the "smoothest running car ever built."

Aside from the unique feature of the power plant, the Model 15 Elmore, as it is to be known, comprises all the chief elements which go to make up a perfectly "regular" car. The running gear is mounted on 34x4-inch tires, and measures 104 inches wheel base by 56-inch tread. Heavy walled tubular axles are used, having a large diameter, and fitted with roller bearings of approved type. The spur pattern of differential gearing is utilized, a ball bearing being installed to take up the thrust of the bevel driving gears. The suspension is by means of semi-elliptical springs, the front set being 48x2 inches, while those in the rear are 42x2 inches. Both sets have five leaves, and are equipped with clips to lessen the tendency to recoil. The frame is of pressed steel, braced with liberal reinforcements.

A sliding gear transmission is used, giving three speeds in addition to the reverse, and a direct drive on the highest gear. An interlocking system is supplied, as well as a system of interconnection with the brakes, as a safeguard to the mechanism. The clutch is of the Mercedes type, having a bronze expanding ring, which is automatically centred, requires but little attention, and does not "drag" when thrown out of engagement. The transmission shaft runs on roller bearings, and is provided with universal joints both between the gear case and the engine, and the gear case and the rear axle. It is constructed of a special high carbon steel, and is thoroughly protected from dust and dirt at all points.

The office of control is largely centred at the top of the steering gear, where are the spark and throttle levers, rotating over a stationary segment. The wheel itself is 15 inches in diameter, and requires two and a quarter turns to accomplish the full swing of the steering wheels. In addition to the interlocking systems already indicated, there is a special device whereby the engine is throttled whenever the clutch pedal is depressed, an arrangement which is intended to facilitate the process of gear changing.



ELMORE FOUR CYLINDER CHASSIS.

The motor, which is a betterment of the regular Elmore type, has its four cylinders rigged fore and aft of the car, and is rated at 35 horsepower. The cylinder dimensions are 4½x4 inches, which should give ample capacity for the rating. The cylinders are made in unit castings, with dom shaped heads, and all fittings, including the piping, are of cast brass. The construction of the motor includes no valves whatever, a feature which should have considerable weight on the selling stand. The vaporization of the fuel is accomplished in an atomizing carburetter of Elmore design, which has automatic regulation working on the Krebs principle and needing absolutely no attention at any time.

Of the other engine auxiliaries, the circuit breaker is of the wipe contact type, having a roller contact maker, staunchly built and mounted upon the upper end of a vertical shaft driven by bronze mitre gears from a horizontal time shaft. The same shaft also carries the pump, which is easily detachable. The main lubrication is effected through a pressure fed oiler of standard make, which is equipped with sight feed glasses on the dash and also with test cocks at the side to determine the rate of flow. The principal engine bearings are fed from a master grease cup mounted on the dash within easy reach of the driver.

The radiator is of the gilled tube order, and also constitutes the supply tank of the cooling system. The gasolene supply is carried under the driver's seat in a twenty gallon seamless steel tank. The general design of the body

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and hood, following along the lines of the well known foreign types of car, gives the machine a stable and pleasing appearance and an air of complete modernness.

To Make Meddling More Expensive.

As the result of a conference between Judge Kimball, of the Police Department; W. S. Duvall, president of the Washington (D. C.) Automobile Club and Commissioner West, the latter will recommen dthat Congress make radical changes in the "Peace and Order act," approved July 8, 1898, which provides "that the taking and carrying away of the property of another without the right to do so shall be a misdemeanor and punishable by a fine not to exceed $40," so that the fine shall not exceed $100, or imprisonment for a term not to exceed six month, or both. Also that consideration be given to changing the phraseology, "taking and carrying away," so as to cover the movement of vehicles without the offender actualy taking and carrying away the property; that the police department be notified that tampering with automobiles, jumping in and out of vehicles left unguarded, manipulation of brakes or clutches and the tooting of horns will render the persons guilty of these offenses liable to a charge of disorderly conduct under Sections 5 and 6 of the Act of July 29, 1889, as amended July 8, 1898, and under which a penalty of not more than $25 for each and every such offence can be imposed.

Also that the commissioners recommend to Congress that Section 1 of the Act of July 29, 1892, be amended, so that the maximum penalty for injuring, destroying, etc., private property shall be increased to $100 for each and every such offence, instead of $50, as now provided, or imprisonment not to exceed six months, or both, in the discretion of the court.

5,000 Miles Without a Puncture.

Speaking of tire records, the sort of records of which both the tire makers and the user like to boast, A. G. Hoffman, treasurer of the Hartford Suspension Co., is relating with considerable pride how he drove his car, a 50 horsepower Thomas Flyer, 5,150 miles during the summer and autumn without getting a single puncture, and that not over the sand papered boulevards, but over the give and take conditions of country thoroughfares throughout New Jersey and New York States. Which record, he thinks, is quite beyond comparison for a car of such size.

Two Texas Darkies Want Ten Thousand.

When the Southern Pacific Railroad instituted its motor car service between Galveston and Houston, Tex., two weeks ago, it issued a notice that no negroes would be allowed to ride on the cars. A few days afterward two colored law sharks applied for and were refused transportation. Each thinks $10,000 the proper financial balm to soothe his wounded feelings, and has accordingly entered suit.

At its special meeting Tuesday night, 12th inst., the Automobile Club of America voted to increase the membership limit from 700 to 1,000, exclusive of life members. This will permit the admission of some 100 applicants who have been on the waiting list.

TO REDUCE THE SHOCKS

Simple Device Easily Applied to Any Car—How it Performs its Mission.

That there is more in the spring damping problem than would at first appear is shown quite as well by the number of various devices on the market, each of which is supposedly able to cope with the needs of the

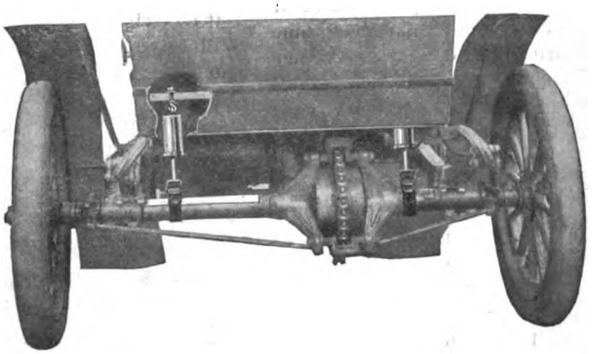


case, and the different principles upon which they depend as by the amount of discussion which is running its course through the press at the present time. That the perfect shock absorber, or spring check, or recoil check, whatever may be its name, is calculated to greatly prolong the life of the tires and also to work a great saving in the mechanism of the machine, as well as to relieve the fatigue incident upon long rides over rough roads, goes without saying.

The latest of these devices to come into the public eye is called the House Patent Spring Recoil Check, and is a product of the Baldwin Chain & Mfg. Co., of Worcester, Mass. Its action depends upon the theory that to check the downward motion of the car body upon the springs is to deprive them of their resiliency in just proportion to the amount of damping effect, and hence that to in any way hinder their working in the downward direction involves a greater strain upon the tires and the entire machine than should be put upon it. Hence the whole effort here is to check the rebound, as its name implies, leaving the main suspension entirely unhindered in its action except when the motion is upward; also, the measure of the checking effect is regulated in proportion to the force of the rebound, so that under ordinary circumstances, when the shocks encountered on the road are comparatively slight, there is little or no retardation to the action of the springs themselves.

The amount of mechanism involved is slight and not likely to become deranged, and in its application the device is correspondingly simple. It consists essentially of a right cylinder, which is furnished with an eye at its upper end for attachment to the frame of the car or to its floor. Within this is a segmental piston packed with specially treated oiled leather, which gives the desired frictional resistance. The segments of the piston are controlled in their mutual relation by means of toggle joints, which are retained in their extreme position by springs which also hold the piston at the upper end of the cylinder. To the piston is attached a piston rod which is connected to the axle of the car by means of a strap, the method of attachment to the piston being such that upon its being drawn down the toggles are expanded, forcing the segments out against the cylinder walls.

As is evident, the amount of resistance which is offered to the piston's motion is proportional to the pull, a slight amount of force causing a slight expansion of the piston with comparatively slight resistance in consequence, while a stronger pull involves a greater expansion of the toggles, with a greater amount of resistance of the piston against the walls of the cylinder. The arrangement is the result of a long series of exhaustive tests which have been made upon the road, from which the theory was first deduced and the mechanical means of attaining it evolved as a result.

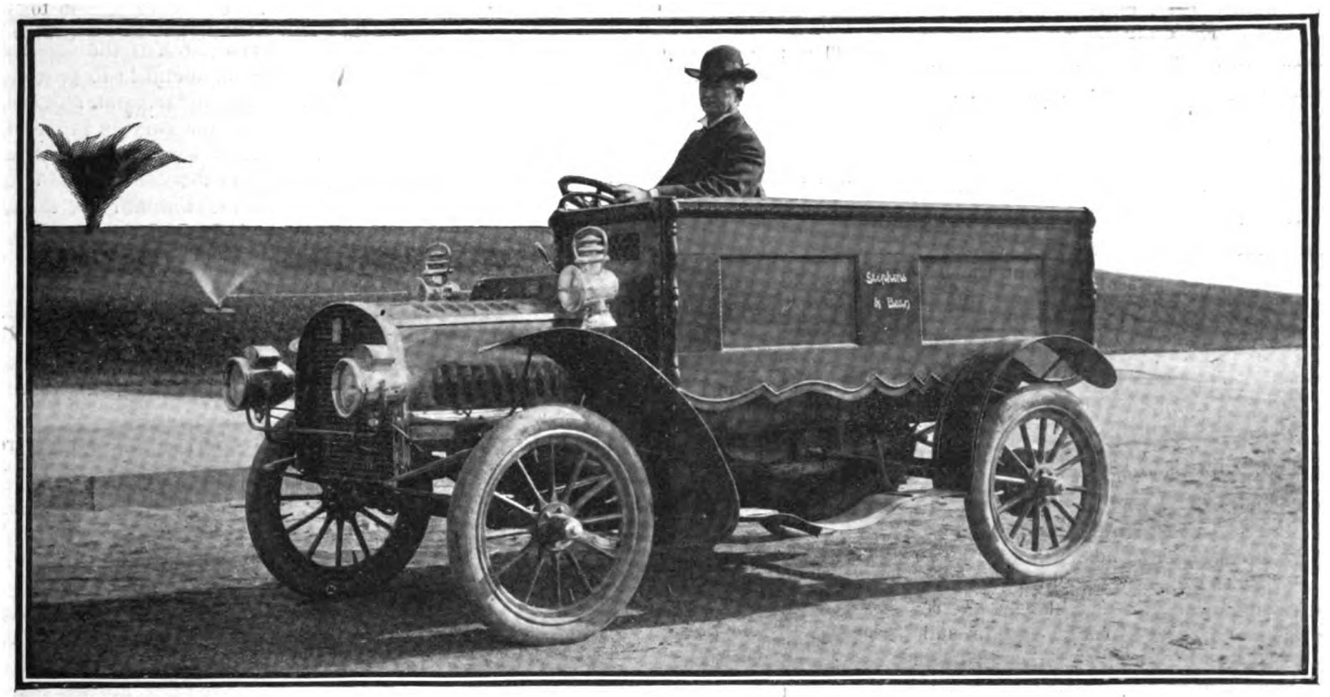


Californians Talk of a Boycott.

The Southern California Automobile Dealers' Association has decided to boycott the Southern Pacific Railroad Co. if the new rules regulating the transportation of automobiles on the ferries from Oakland to San Francisco are not withdrawn. The rules do not allow the carrying of cars on the boats between the hours of 7 and 9 a. m. and 4 and 6 p. m. to Oakland, and 6 to 9 a. m. and 4 to 6 p. m. to San Francisco on week days. On Sundays no automobiles will be transported to Oakland between the hours of 10 a. m. and 1 p. m.

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Undertaking Brought Right Up to Date.



Fresno, Cal., believes it has cause for pride. It has the only up to date undertaker's wagon in America. The accompanying illustration shows it "in all its glory." It is not only the property, but the design, of the funeral directing firm of Stephens & Bean. In addition to the driver and the compartment for the casket and necessary appliances, it also carries an attendant. A Fresno paper is responsible for the statement that it "is neat and graceful in appearance and it glides along the streets, attracting much admiration as it goes on its mission." The firm thinks so highly of the vehicle as a "business-bringer" that they feature it in their advertising.

Long Islands Make Annual Awards.

For driving his car the greatest number of miles—6,436, to be correct—Charles Jerome Edwards was awarded the Mersereau Mileage Mug, as the trophy is alliteratively dubbed, at the fifty annual banquet and meeting of the Long Island Automobile Club, which was held at the clubhouse, Brooklyn, N. Y., on Wednesday night of last week. Dr. C. Pinney was given the President's Cup, for securing the largest number of members during the year. Dr. Pinney induced twenty-four to sign application blanks. That the competition was productive of good results is evidenced by the membership roll. Twelve months ago there were 127 names on the roster, now there are 297.

The Mackay Meandering Memento, going to the member touring in the greatest number of States and making proper returns to the committee, was won by Charles Jerome Edwards, who drove his car in five States other than New York. Mr. Edwards will offer a similar trophy in 1906. The Adams Attendance Award went to A. R. Pardington, who was present at every one of its nine regular runs called by the touring committee. Raymond Healy got a Veeder Odometer of dashboard type for having covered the greatest number of miles of any member recording the same on an odometer of the make given as prize. Mr. Healy drove his car 5,989 miles.

It was announced at the meeting that the club would pursue its previous policy of holding a continuous show of new cars at its clubrooms, No. 360 Cumberland avenue, throughout the winter. The first of these novel shows will be held this week Friday. The 1906 models of the Royal tourist, Reo and Franklin cars will be exhibited and explained.

Preceding the presentation of the awards and the banquet, the annual election of officers took place. The following went in with a landslide of "Ayes!": President, Alfred Wilmarth; vice-president, Edwin Melvin; secretary, Walter G. Pierson; treasurer, Charles Jerome Edwards; board of governors (two years), Frank G. Webb, Dr. C. B. Baker and John H. Manuel, Jr.; membership committee, Lefferts Lefferts and M. S. Allen.

More Witch Law in Massachusetts.

That all automobiles and motorcycles shall be excluded from the northern roadway of Commonwealth avenue, between the Boston line and the boundary of Weston, is the edict of the Newton (Mass.) Board of Aldermen. The regulation reads in part, as follows: "No automobile or motorcycle shall go upon or use the northerly roadway of Commonwealth avenue from the Boston line to the Charles River, excepting to go to a residence or building upon the northerly side of said Commonwealth avenue, and then only by the most direct route from the southerly roadway. . . . It is hereby ordered that any automobile or motorcycle may be run on said southerly roadway at a speed not exceeding fifteen miles an hour."

Judge Weand Dispenses Real Justice.

In setting aside a verdict of $150, given by a jury last summer to Max Silberman, of Jenkintown, Pa., for damages for alleged personal injuries sustained in a collision between the former's horse and the defendant's automobile, Judge H. K. Weand, at Norristown, on Monday, said:

"An owner of an automobile has as much right to the highway as the driver of a horse and carriage. If a horse cannot be driven past a vehicle or car, properly managed, the owner should keep him off the highway or submit to the consequences. We do not wish to infringe upon the function of the jury in matters of fact; but, recognizing the hostility and feeling in the country against the reckless use of automobiles, we think the jury may have been misled. We do not say that it was not a fair case for deliberation and for an honest difference of judgment, but in our opinion the weight of the testimony was in favor of defendant, and that he ought to have the verdict of another jury, whether it be for or against him."

Numerous tales are told of the eccentric behavior of that ubiquitous bird the stork, but when one lighted upon the top of a London motor omnibus the other day he broke all previous records. It is reported that the visit was a success and that "both are now doing well."

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METALS FOR MOTOR CARS

The Vast Differences in Grades of Iron and Steel—Homely Facts Little Understood.

It is said that the cost of the material that goes to make up the constituent parts of the modern motor car is in excess of the expense for labor in building. Whether this be true or not it is certain that few realize to what extent the nature of the steel, iron and other metals employed control the strength, weight and durability of the car of which they form part. It is only within very recently that many makers were totally in the dark in respect to the exact characteristics of the metals they were employing and they were accordingly forced to add weight in order to attain strength and even then were not certain of durability. In order to attain all the desirable features requisite the metal must be thoroughly tested and orders placed in accordance with the results ascertained—that is, on a definite specification to suit the particular end to which it is to be put.

In this respect France must readily be accorded the palm as a pioneer, investigations along this line being carried forward extensively by her makers before the rest of the world awoke to the fact that such a thing might be an advantage. Her metallurgists were so far in the lead that their firms were able to supply motor car builders with all the varying grades of steel in bar, rod, channel section or tube, and exactly to specification as regards the percentage of carbon. The services of expert chemists and metallurgists are naturally beyond the reach of smaller builders, but where the rolling mill and foundry force make up the deficiency the absence of such facilities is not felt to the same extent.

Just what "steel" means to the layman is not hard to define; briefly put it as a metal harder than iron, nothing more, nothing less. Given a knife blade he can usually tell whether it is steel or not by its spring and capacity to retain a cutting edge. But all steel is merely steel to him, and further than the rudimentary stage in classifying it as compared with wrought or cast iron he does not go. So far as appearance is concerned iron and steel both look alike and it takes more than the novice to distinguish them.

This is not to his discredit by any means, nor to that of the more experienced metal worker, for the difference between iron and steel of a certain character is so exceedingly slight that decimals of four figures must be resorted to in order to correctly express it. That is, the proportion of carbon that must be employed to convert iron into what is commonly known as mild steel, though the decimals are not employed in trade parlance, steel of a very mild nature being termed "10 point carbon," equivalent to but one-tenth of 1 per cent. Steel of this character is very ductile, easily machined and not liable to fracture, but must be thoroughly case hardened to form a frictional bearing surface.

What is generally termed machine steel is obtained by an increase to 25 or 30 point carbon when made on the Bessemer or Siemen's process, but this is still a soft metal and it is not until 50 point carbon is reached that it will harden slightly by direct quenching when heated to redness. From 60 points upward the metal takes on a greater degree of hardness until the tool steel stage is reached. In consequence of its strong affinity for oxygen, carbon, or rather substances containing it, are generally used for the purpose of reducing iron and similar metals from the ore, in which they are frequently combined with oxygen. Iron ore particularly is always smelted in conjunction with carbonaceous matter, such as the charcoal used in Sweden, which combines to make a grade of iron that is very pure and is highly valued for use in the construction of the pole pieces of dynamos in which rapid and thorough demagnetization is a requisite of prime importance.

Generally speaking, the only distinctions current are wrought or cast iron, which are, however, terms embracing as great a range of character in the metal as the word steel. Pig iron is the first product of the blast furnace and represents the primary stage in its reduction from the ore. In this process it is to a very great extent separated from its grosser impurities which, being lighter than the molten metal, float on it and are run off in the form of liquid slag, after the withdrawal of the charge of iron. In the heavy bars into which it is molded, termed pigs, from which it takes its name, it is coarse-grained and brittle. A second stage consists of its refinement by contact with charcoal, which results in the production what is ordinarily known as cast iron. It is then converted into wrought iron by a process termed puddling, which is nothing more or less than a constant stirring or agitation of the molten iron in order to bring every portion of it in contact with the air or oxygen which it contains. At this stage there is an excess of carbon, the iron is too rich in it and is accordingly wrought into masses of a size permitting of its ready handling and then passed through successive rollers, is reheated and rolled again, as well as hammered, the process being continued until the carbon is practically eliminated. The iron is then approximately pure and is very tough and flexible.

By whatever process the pure iron is produced the metal known as steel is a compound of iron and carbon, the latter in minute proportion. The chief difference between commercial mild steel and tool steel lies in the degree of purity of the iron at the start and the percentage of carbon added during the process of conversion, though for some purposes still smaller percentages of other substances such as maganese, silcon or tungsten may be added.

From this it will be apparent what a small difference in the composition of the metal may mean to the strength of such parts as axles, channel framing, steering knuckles and the like, each part calling for a specific mixture and character, if the smallest practicable amount of metal is to prove equal to the work it has to do, and still retain its shape against all the varying range of stresses to which it is subjected. Although the subject is beyond the knowledge of the average car owner the durability of the mechanism as well as his own safety are in the hands of the metallurgist. The science of the chemistry of metals thus has an important bearing on the production of the most efficient car, and it is a matter for congratulation that the subject is now coming in for the attention it deserves in this country.

For a Street Motor Railway.

W. H. Mitchell, of New York City, and W. S. Brawner, of St. Louis, have been granted a franchise by the city of Joplin to build and operate a motor street railway in that city. The proposed line is to be 100 miles in length, and will have its beginning in Joplin, and, after making a circuitous route through the country southeast of Joplin, will have its ending at this place. The line through the city will be operated as a streetcar line, and will run cars at intervals sufficiently close to handle the traffic. The object of the road is to open up the fine farming country south and east to the markets of Joplin. The cost of building the road is estimated at $2,000,000. The line will be operated with gasolene motor cars, the first of the kind in the Southwest. The franchise provides that freight depots can be established at certain points in the city, and that light freight in combination cars may be hauled through the city, not to exceed two cars at a time and not to stop at any of the crossings of the streets to exceed five minutes.

Thomas Tested on a Mountain.

To test its hill climbing powers, one of the 1906 model Thomas Flyers was put through its paces on the Wilkesbarre (Pa.) Mountain Monday, this week. The party in the car consisted of Montague Roberts and six other passengers, whose combined weight totalled 1,285 pounds. The run was made from the Empire Hotel to the top of the mountain, two and one-half miles, in 8 minutes and 8 seconds. Part of this grade is 27½ per cent. The car was again sent up the mountain, and the time taken from the beginning to the end of the grade, a distance of over a mile. The time was 4 minutes and 16 seconds, and the occupants made affidavit stating this to be accurate, and the first authentic time clocked by residents of Wilkesbarre.

The George N. Pierce Co. have adopted the Hartford suspension as a part of the regular equipment of the 1906 Pierce cars. It will be supplied without extra charge.

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MEASURING POWER CONSUMPTION

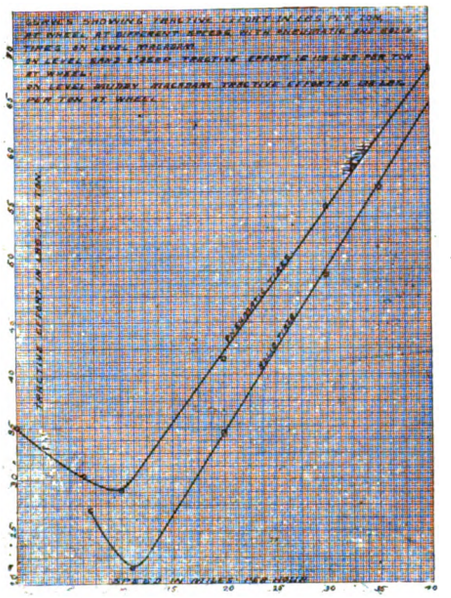
Churchward Explains and Illustrates How it May be Done—His Instructive Discourse.

With the aid of an imposingly mysterious and complicated instrument that excited the curiosity of all who beheld it, a bank of Edison storage cells, a young trolley car controller and a duo of human assistants, Alexander Churchward lectured before the Automobile Club of America on Tuesday last on the subject of "The Energy Consumed by Electric Automobiles." So businesslike appeared the array of apparatus that President Morris expressed the fear that the club would begin to move off when the controller was turned on. It was the intention of Mr. Churchward, who is a member of the club, to have a small electric vehicle chassis upon which to demonstrate the workings of the instruments, but it was unfortunately found impossible to get it into the club rooms.

"Although the power consumed by automobiles under various operating conditions has formed the subject matter of many articles in the technical press, as well as of numerous papers read before scientific bodies, it has, until the present time, been wellnigh impossible to indicate the instantaneous value of the power consumed by a vehicle when running under the conditions met with in city streets and country roads," said the lecturer in opening his address.

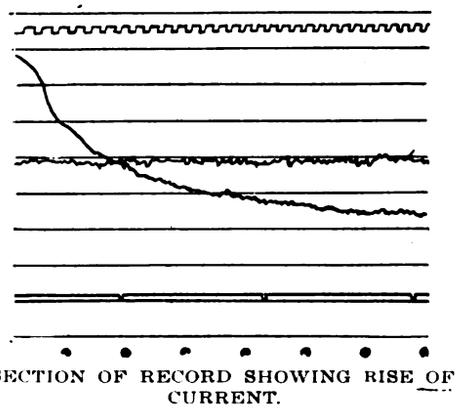
"In the case of the gasolene car it is practically impossible to take indicator cards of each cylinder simultaneously, together with the speed of the car; with the steam car, while it is a simpler problem, it is hard to take accurate readings of the power consumed at any given instant. With the electric automobile it is, however, possible to measure the voltage, the amperage and the speed of the car simultaneously. To accomplish this the General Electric Company has designed a special graphic recording meter, the principles of which are based upon those employed in the apparatus constructed by the same company for testing street railway cars.

"It consists of a spring actuated roll of paper which is caused to pass beneath two automatic pens terminating the pointers of the voltmeter and ammeter. The paper may be regulated to run at any speed desired. It is ruled longitudinally into spaces calculated to represent a known unit, such as ten or fifteen amperes, the pens being arranged to pass across it from side to side in the course of its travel. A chronograph attachment automatically records intervals of five seconds, and a circuit adapted to be closed by a contact on the front wheel records every revolution of the latter on the strip. It has been found necessary to use one of the front wheels, instead of a driver, owing to the slip of the latter. The data of elapsed time and revolutions per minute thus recorded simultaneously with the amount of energy consumed supply a basis upon which the relation of the latter to the speed may be figured. The working of the instrument will be better understood from the section of its record here reproduced. The line next to the row of small perforations is the work of the chronograph, each indentation representing the passage of a period of five seconds. On the opposite side of the strip the regularly



CHARACTERISTIC CURVES WITH PNEUMATIC AND SOLID TIRES.

serrated line gives the equivalent of revolutions of the front wheel per minute, which, in connection with the chronograph record, is readily reduced to miles per hour. The record in the centre of the strip represents the consumption of energy, the voltage remaining practically constant, while the sharp rise of the current curve illustrates the increase due to accelerati.n. The apparatus complete weighs 150 pounds and is so delicately con-



SECTION OF RECORD SHOWING RISE OF CURRENT.

stituted that it is necessary to suspend it on springs.

"This apparatus, although primarily designed for indicating the power consumption of electric vehicles, has a very important, if indirect, use in the steam and gasolene automobile field. The results given below show the tractive effort in terms of the draw-bar pull in pounds per ton weight of car for electric cars when operating under widely varying conditions, and thus, knowing the efficiency of the mechanical transmission gear and weight of the car, it is possible from these results to deduct rules giving the requisite brake horsepower for any weight of car when the weight, speed and operating conditions are learned.

"Last year, in co-operation with the principal makers of commercial electric vehicles, I made a series of tests to determine the energy consumed by various cars when operating under actual working conditions. The cars used in these tests ranged from the little single seated runabout up to the large five-ton trucks used by manufacturers. To make a fair comparison between the different types of machines, each was run over a course which was selected with grades of different magnitude and pavements of various compositions.

"The grades selected were as follows:

TABLE NO. 1.

No.	Material.	Grade.
1.	Asphalt	Level
2.	Macadam	1.1%
3.	Macadam	Level
4.	Belgian block	9.5%
5.	Asphalt	4.7%
6.	Macadam	3.75%
7.	Asphalt and brick	3.125%
8.	Asphalt	2.25%

"Another course was selected in New York in Fifth avenue, extending from Sixtieth to 110th street. The temperature was taken of both the pavement and the air at various periods throughout the tests. The following table gives the results of these tests. The numbers in the first column refer to the grades given in table No. 1. The second column gives the draw-bar pull per ton weight of car; these readings are the averages taken for seventeen different vehicles. The third column gives the average speed of each test, and the last column states whether solid or pneumatic tires were used.

TABLE NO. 2

Grade No.	Draw-bar pull.	M. P. H.	Type of tire.
1	40	12	Solid
1	50	12	Pneumatic
2	48	11	Solid
2	66	10.5	Pneumatic
3	41	12	Pneumatic
3	49	12	Solid
4	250	5	Solid
4	270	5	Pneumatic
5	132	7	Solid
5	150	7	Pneumatic
6	114	8	Solid
6	128	8	Solid
7	95	8.5	Solid
7	119	8.5	Pneumatic
8	85	8.8	Solid
8	103	8.8	Pneumatic

"The difference in the consumption of power when running on wet and dry pavements was discovered to be so small that the additional tractive effort required when the pavements are wet may be neglected, skidding not considered.

"The most remarkable thing brought to light by these tests was the fact that a given car, when frequently running under exactly the same operating conditions over a given stretch of level asphalt track, will by no means require the same amount of energy for each run. The difference in the power consumed in several instances amounted to

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22 per cent, while in one case a variation of 72 per cent was indicated with the same car. There is little doubt that this great difference—namely, 72 per cent—was largely owing to the temperature of the asphalt, as the tests lasted for several weeks and were made at different times of the day.

"The temperature of the asphalt greatly affects the consumption of energy. In one case a difference of 40 per cent was found between operating a car on cold and warm asphalt.

"It was further proved that there are no difficulties in predetermining the amount of energy required to propel a given weight of car up a grade of known magnitude, as the ordinary mathematical laws generally used for this purpose were found to be perfectly accurate. Given horsepower, weight and grade, it is easy to calculate speed.

"It is interesting to note that while the pneumatic tires are less efficient than solid tires when operating on smooth pavements (absorbing about 15 per cent more energy), they are more efficient on rough roads. The reason for this condition of things is apparent when we bear in mind the well known fact that pneumatic tires are compressible, and solid tires, so far as practical purposes are concerned, are incompressible. Solid rubber is not quite as compressible as water. The natural result of this is that a pneumatic tire will run over or around any small obstacle in its path, the tire itself being indented rather than tending to raise the vehicle, while the solid tire must either rise over any obstacle or else the rubber will become distorted out of its true shape. It is this continual lifting of the car, caused by the many small obstructions which form a rough road, that consumes the extra amount of energy and makes the solid tire less efficient for such service. The tests further showed that a car equipped with pneumatic tires provided with leather treads, consumed more energy than when plain pneumatic tires were used. Steel studded treads have, in fact, been shown to bring about a decrease of 10 per cent in the speed.

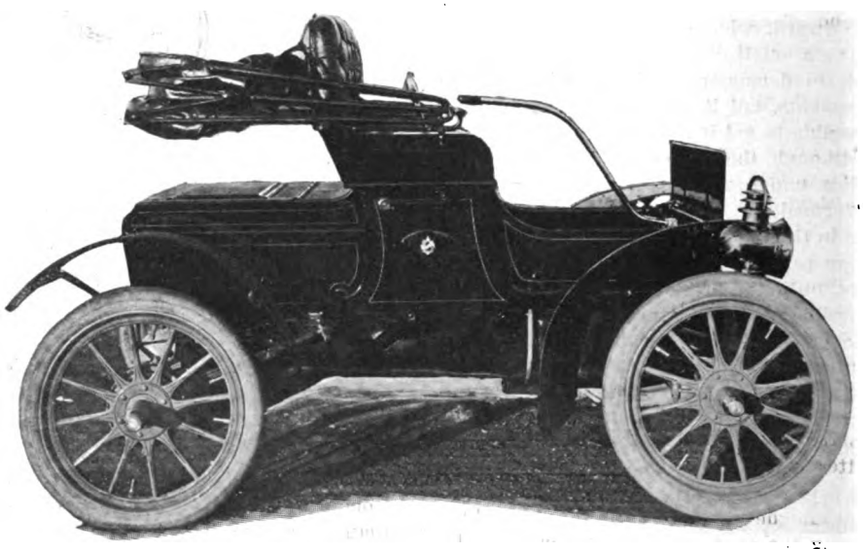
"The results of these tests conclusively proved that it is impossible to show the true saving in energy consumed by the use of such devices as pneumatic tires, or special types of bearings, by simply running a car at its maximum speed over a level road. Atmospheric conditions vary every day, and the factor of wind pressure is ordinarily greatly underestimated, even the surface presented by the tires of the wheels or the spokes in case of a cross wind having to be considered to calculate it accurately. At thirty miles an hour the atmospheric resistance amounts to four and one-half pounds per square foot.

"By the courtesy of Mr. Edison and Mr. Lansden I was enabled to make a series of tests with various electric vehicles, running at a much higher speed than could be obtained with any of the standard commercial cars. The curve illustrated shows the results of these tests, giving the increase in tractive effort required per ton mile as the speed increased. These tests were made with both solid and pneumatic tires. It can be seen from the curve that a speed of nearly forty miles an hour was reached. It was also determined that the draw-bar pull when running through two inches of sand was increased 119 pounds per ton, while on muddy roads it showed an increase of 138 pounds per ton.

"The results of these tests have been reduced to tractive effort in pounds per ton in order that they may be used for calculating the necessary power required for operating steam and gasolene cars under any ordinary service conditions."

Olds Puts up a New Front.

At length Oldsmobile runabouts will be seen minus the long familiar "curved dash." For 1906 the Olds Motor Works will give the option of a body of the box type, having a straight leather dash in front and looking not altogether unlike a sidebar box buggy. The seat lines will be practically unchanged, while the deck at the back, instead of running to a sharp corner and an undercut back, will be rounded smoothly at the corner to a vertical back, the deck being nicely panelled. The axles are placed at the limits of the body, which, with the use of ploughshare curves in front and straight wings in the rear, gives the machine a neat and rangy appearance which is altogether attractive.



OLDSMOBILE RUNABOUT WITH BOX FRONT.

Features of Wayne's New Plant.

The new factory building of the Wayne Automobile Co., now being constructed on the northwest corner of Piquette avenue and Brush street, Detroit, Mich., will be of no mean dimensions, as its plans indicate. The main building, three stories high, will be 400 feet on Brush street and 300 feet on Piquette avenue. The testing building will be back of the main building, 36x100 feet, and the boiler and engine room, 30x45 feet, with a covered loading platform 150x16 feet. There will be a private running track, inclosed, to test cars on the grounds. All the buildings will be mill construction and will be provided with the sprinkler system. The builders are under contract to have part of the main building and testing building and the boiler and engine house finished by January 15, 1906. The remainder will be completed in the spring.

Buffalo Electric Becomes Babcock.

The recently incorporated Babcock Electric Carriage Co., Buffalo, N. Y., have purchased and taken over the assets and goodwill of the Buffalo Electric Carriage Co., and are figuring on an output of not less than five hundred vehicles. They will manufacture on similar lines to the old company, but will add two or three new models.

F. A. Babcock, president and general manager of the old concern, occupies the same offices in the new one; F. L. Bapst is vice-president, and E. R. Whitney secretary and treasurer. The other directors are R. B. Adam, Harry Yates, Charles L. Williams and Samuel J. Dark, all of Buffalo, N. Y.

Mahoning Will Wind Up.

The Mahoning Motor Car Co., of Youngstown, Ohio, which is a subsidiary company of the Youngstown Carriage & Wagon Co., has decided to go out of business and the affairs of the concern will be wound up immediately. Charles Gaither, who was in charge of the mechanical department, it is understood, has acquired the letters patent of the company and will go into business for himself.

Midgley's First Meeting in New Factory.

At the annual meeting of the stockholders of the Midgley Manufacturing Company, Columbus, Ohio, in their new factory, the following officers were elected to serve during the ensuing year: Thomas Midgley, president; E. A. Cole, vice-president; C. S. M. Krumm, secretary; F. W. Flowers, treasurer and general manager. The annual report disclosed a most gratifying season.

Ranier Makes a Change.

C. G. Rainier has resigned from the Rainier company, and is now with the Vehicle Equipment Co. as general representative.

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"KEEPING TABS" ON CYLINDERS

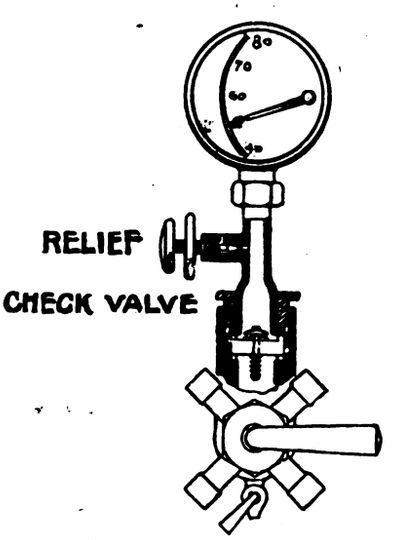
Ingenious Instrument that Performs the Service—How it Indicates the Power.

What the end of the craze for decorating the dashboard with a mass of devices may be, there is no telling. Some of them are worse than useless, and the practice seems to have culminated in at least one instance in the man who boasts that he has close to a thousand dollars worth on his car and is still open for suggestions. The desire to encumber every available square inch of the dashboard with a device, whether ornamental or useful, is apparently a trait of human nature that the accessory man can rely upon to the end of time.

One of the most recent additions that can lay claim to at least a few good reasons for its right to exist, is in the form of a pressure test gauge. It is termed the Gibson Power Indicator and was referred to in these columns when first exploited by its inventor. It is of English origin and has since undergone practical tests and has been placed on the market in full fledged form so that it will doubtless be a part of the equipment of a number of cars on the other side during the coming season.

When the engine begins to droop and shows unequivocal signs of lack of vigor, the difficulty of locating the fault on the road is frequently such that it is considered the better plan to run home without tinkering. Current practice favors a resort to cutting out the cylinders consecutively by preventing the explosion of the charge and provision for switching off the ignition in this manner is now coming to be a standard part of the equipment of the up-to-date car. This is, of course, a process of elimination which ends by tracing the fault to the cylinder that is either not working at all or developing so little power that it is proving a drag on the others. This method of testing is, however, not one that will give results of an entirely satisfactory nature except where the symptoms of the trouble are sufficiently decided to respond to this treatment. It is possible that fairly equal results may be obtained from all cylinders when tested under such conditions without revealing the source of fault, which immediately recurs when the engine is run under normal load in driving the car, some faults only making themselves apparant at high speeds. Hence the value of an accurate instrument indicating the work done by each cylinder in the regular course of duty.

This so-called power indicator provides a convenient means for the purpose. It consists of the usual form of gauge dial to be affixed to the dashboard or any convenient location where plainly visible. A copper tube of small bore is taken from the compression chamber of each cylinder and led to a four way cock placed just beneath the gauge. Between the two is a compression release cock or escape, which the Englishman picturesquely terms a "leak valve." Just below this is a check valve to prevent the escape of the compressed gas when the cylinder begins to exhaust. In the technical nomenclature of the Briton, this is a "non-return." The arrangement of the various parts of the device may be seen from the accompanying illustration. Starting from the bottom there is a small cock to shut off the pressure from the gauge altogether and above this the four way connection representing the ends of the copper tubes coming from each cylinder with its handle by means of which the pressure from any one of the cylinders may be diverted into the gauge. Just above this is the check valve to prevent its return.



In operation it is merely necessary to turn the handle to the cylinder suspected, means of identification being rendered easy by numbering the leads, and if the cock be open the hand on the dial will immediately respond to the pressure generated by the explosion. If nothing further be required and it is the purpose to test each cylinder in turn, the hand is returned to zero by opening the relief or "leak" valve. By means of the adjustment of the latter the gauge may remain connected to one cylinder for a length of time and the escape being constant, the hand will show whether the compression in the cylinder is uniform or fluctuating. All four cylinders may be tested in rotation in this manner in very few minutes, with results that are apt to yield more definite information than a long session with the starting handle. As it is not necessary to stop the car the motor may be tested under widely varying conditions, such as in hill climbing, running at various speeds on the level, and its performance noted. Such data would be of value for reference when trouble did develop.

Evidently the motor bus is a paying investment in Cuba. The West Indies Transportation Co., of Havana, who have had eight Knox cars in use during this year, have ordered four more of them—three twenty-eight passenger buses and one five passenger car.

REPAINTING OLD BODIES

Not Such a Simple Task as May Appear—How to Obtain Best Results.

In repainting old bodies the utmost caution must be taken if the best result is desired, says the Blacksmith and Wheelwright. The body should be sandpapered with No. 1½ sandpaper, and should be cut down thoroughly, cutting off all dirt and old paint that is cracked or peeling. After it is sandpapered well, a coat of permanent woodfilling should be put on with a good bristle brush, and then it should be wiped off perfectly dry and clean with a clean piece of cloth. After this is dry, which takes from eighteen to twenty-four hours, a coat of body filling should be put on. The body filling is mixed as follows: Body filling and white keg lead of equal parts and thinned with turpentine only. After this is dry, which takes about twelve hours, a coat of body filling without the lead should be applied every day until four or five coats are on the body. The body is then ready for rubbing, which should be done with brick pumice stone, care being taken to use plenty of water to keep the stone from clogging and scratching. After the body is rubbed out it should again be sandpapered with No. ½ paper and all the dust caused by the rubbing carefully removed. It should then be dusted well and it is ready for the color coats. Two coats of color should be applied with a two-inch camelhair brush. After this is dry, which takes about eight hours for each coat, the body is ready for the rubbing varnish, which should be put on with a two-inch badgerhair brush. The rubbing varnish should be given at least twenty-four to thirty-six hours to dry before rubbing should be done with pulverized pumice stone and water. Care being taken that all pimples are rubbed out. After the body has been washed off clean it is then ready for the finishing coat of varnish, which should be put on with a two-inch badgerhair brush. Before putting this finishing touch on the body, the floor of the room in which the body is to be varnished should be sprinkled with water, so as to keep down the dust.

In case it is not desired to go through such an elaborate and lengthy process as the foregoing, then after the body has been sandpapered, touch up all bare wood spots with oil lead priming. Let dry twenty-four hours. Now give body a coat of flat lead which is mixed same as second coat lead for gears. Let this dry twenty-four hours and putty all uneven places and when dry sandpaper with No. 1 paper. Dust off cleanly and apply color.

Should a much better job be desired than either of the two preceding methods, proceed to burn off all the old paint with either a flat iron heated in the forge or a gasolene lamp prepared for such work. In burning

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off the body aim to burn the paint against the grain of the wood, thus insuring a smooth surface. The knife used to scrape off the old paint should be a stiff putty or glazier's knife ground to a square edge.

It is advisable where a body is burnt off, to use a permanent wood filling for the first coat, as it is a time saver. Then proceed with method No. 1 throughout, and with care even a beginner can turn out a fair job of carriage painting.

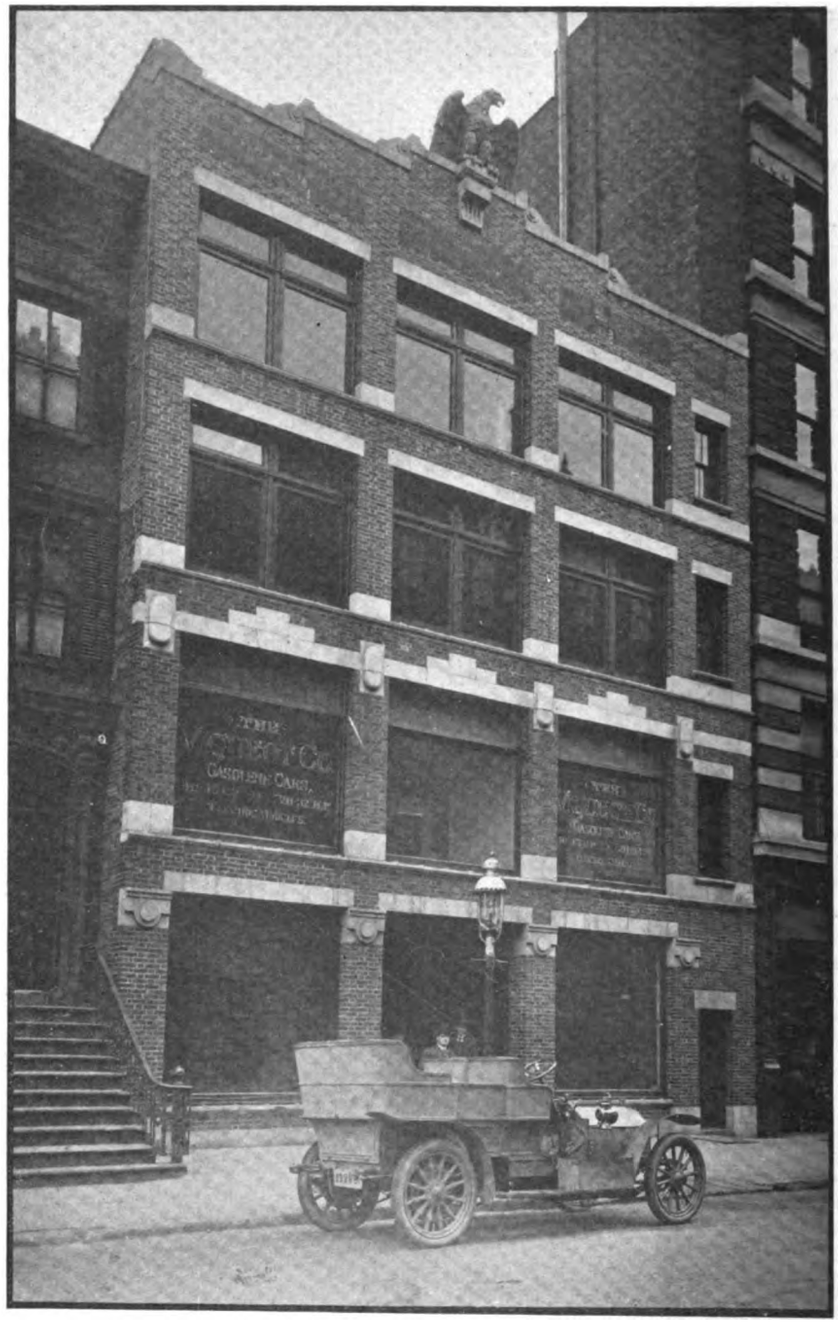
The proper tools are of the utmost importance to a beginner. While the brushes may cost a little more, always get the best. The difference in cost will be more than made up in quality of work and its pleasing appearance. The brushes usually used by coach painters are soft brushes, 0 size oval. These are used for gear work or for body filling. Next in importance are camelhair brushes, sizes 1, 1½ and 2. These are used for second coat of lead and colors. Next is a limber blade putty knife for puttying gears and bodies. Carriage and not house paints should always be used on carriages, and varnish of some good reputable maker will give satisfactory results. Where a poor or cheap varnish is used it would destroy one's best efforts.

One of the most essential things in repainting old gears is to get every particle of grease and dirt off, as paint will not dry on a greasy surface. Next is to sandpaper the gear, cutting off smooth as possible all places where the paint has been cracked or blistered. After this has been done the gear is ready for the first coat of paint, which is known as priming. For red gears the coat is mixed as follows: Three parts of white keg lead and one part of Indian red mixed with boiled linseed oil, one gill to every quart of priming. If the gear is to be painted black, put one part of lampblack instead of Indian red. After this coat is dry, which takes about twenty-four hours, the gear is ready to be puttied, the putty being mixed as follows: For red use dry white lead three parts and Indian red one part, with rubbing varnish two parts and coach painter's japan one part. The putty should be put on as smooth as possible. When this is dry, which takes about twelve hours, the gear should be sandpapered with No. 1½ paper. Care should be taken while puttying to fill up all holes and cracks, and while sandpapering to cut off all the edges of putty, but not the paint underneath; the gear should then be dusted off thoroughly.

Then it is ready for the second coat of lead, which should be mixed same as priming, omitting the oil and japan and thinning with turpentine only. After this is dry, which takes about twelve hours, the gear is ready for the color coats, which can be bought ready for use with the exception of thinning with a little turpentine. These coats should be put on also with a camelhair brush. After this is dry, which takes about eight hours, the gear is ready for the finishing coats of varnish, which should be put on with a 1¼-inch badgerhair brush and using one-coat gear or elastic gear varnish.

In case the gear is to be painted green, black, dark brown or wine color, the priming should be mixed as follows: White keg lead three parts and lampblack one part. The second coat is mixed same as priming, with the exception that the second coat has no oil in it.

Handsome Home of the Viqueot.



Evidence is not wanting that the newly established Viqueot Company is making a bid for the business of those who wish to have their cars cared for under the best auspices. The four story and basement building shown in the accompanying photograph, which has been erected especially for this purpose, is intended to house a number of private owners' cars in addition to the sales department of the Viqueot car and the Vehicle Equipment Co.'s line of electrics.

Under the active management of L. S. Caswell, who has long been identified with the sales end of the trade, it already provides accommodation for quite a number, and more are being added rapidly. The location, Nos. 215 and 217 West Forty-eighth street, just off Broadway, is practically in the centre of the automobile district, so that it will doubtless be only a matter of a short time before its facilities are taxed to their limit.

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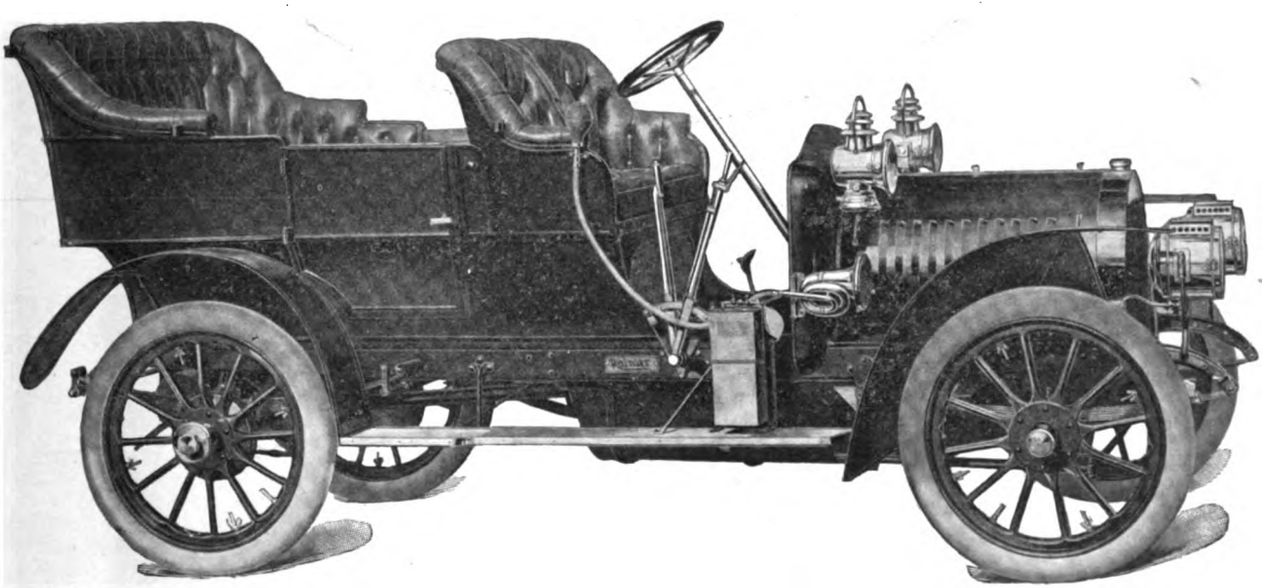
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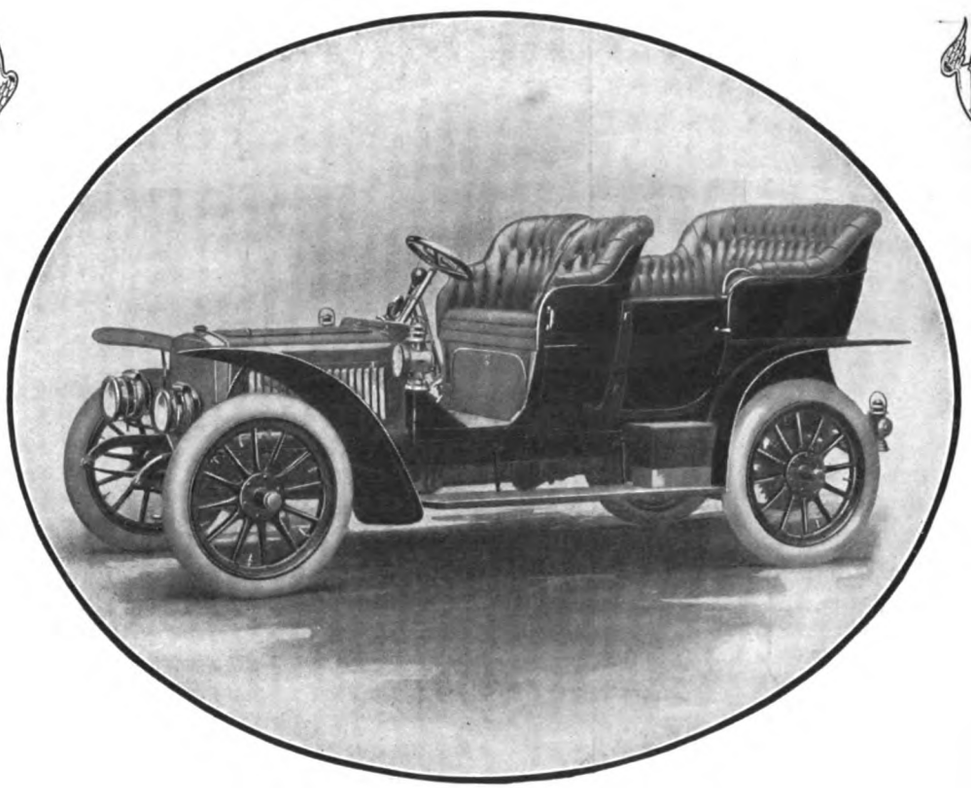
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The Week's Patents.

805,613. Exhaust Muffler. Frederick S. Williams, Amsterdam, N. Y., assignor of two-fifths to C. F. Hesser, Amsterdam, N. Y. Filed July 25, 1904. Serial No. 218,064.

Claim.—1. An exhaust muffler, having communicating exhaust conduits, and non-communicating open-ended air passages arranged one within another.

805,647. Spring Wheel. William H. Jackson, Bakersfield, Cal. Filed July 15, 1904. Serial No. 216,735.

Claim.—1. A wheel comprising a hub, radial tubular spokes carried by the hub, a rim, spokes carried by the rim and having their inner end portions loosely working in the tubular spokes, a coil spring encircling the point of juncture of the hub and rim spokes, respectively, and a sleeve inclosing the said spring.

805,668. Vehicle Body. Herbert H. Rice, Indianapolis, Ind., assignor to Pope Manufacturing Company, Jersey City, N. J., a corporation of New Jersey. Filed January 23, 1905. Serial No. 242,288.

Claim.—1. In a vehicle body, the combination with a dash, of a storm apron permanently attached to the dash on the outside thereof, and means for storing said apron when not in use.

805,673. Vehicle Wheel. George Schram, Detroit, Mich. Filed February 17, 1905 Serial No. 246,143.

Claim.—1. A wheel comprising a hub, spokes yieldingly connected with the hub, a supplemental rim separated longitudinally into a plurality of parts and connected with said spokes, clamping members engaging opposite sides of the supplemental rim, and a tire held between the clamping members.

805,716. Automobile Axle. Adam R. Demory, Canton, Ohio, assignor to The Timken Roller Bearing Axle Company, Canton, Ohio, a corporation. Filed July 10, 1905. Serial No. 268,915.

Claim.—1. A pivotal connection for an axle and a spindle comprising a yoke on the one having a hearing and an aperture in its respective jaws, an adjustable bushing having a bearing therein and adapted to be entered and locked in the aperture, and a cross-pivot on the other having journals adapted to be entered and to operate in the respective bearings, there being shoulders on the pivots adapted to abut against the bearings.

805,740. Motor Vehicle. Willard D. Lowe, Columbus, Ohio. Filed December 2, 1904. Serial No. 235,152.

Claim.—In a device of the character described, the combination with a divided axle of a housing consisting of two parts having outwardly disposed flanges, a shaft, with an enlarged central portion, secured within and extending through recesses in said flanges, pinions loosely mounted on said shaft having their inner faces engaging the enlarged portion thereof, and their outer faces engaging bearing faces on the interior surface of the housing, and gears secured to said axle sections meshing with said pinions.

805,790. Sparking Device. Benjamin G. Gilbough, Chicago, Ill. Filed December 30, 1904. Serial No. 238,926.

Claim.—1. An ignition device or the purpose set forth, comprising an oscillating contact member presented to the charge in the engine cylinder, a gas-actuated member serving to oscillate said contact member, and means for restoring said last-named member to its normal position after the gas pressure is relieved.

805,824. Apparatus for Settling Dust Raised by Motor Vehicles. Samuel S. Stitt, Cambridge, England. Filed September 28, 1905. Serial No. 280,511.

Claim.—1. An apparatus for settling dust raised by the wheels of motor road vehicles, said apparatus comprising means for producing a spray of finely divided liquid behind the wheels of the vehicle, and means for supplying liquid and gas under pressure to the spraying apparatus.

805,828. Vehicle Wheel Rim. Ernst Weiler, Berlin, Germany. Filed March 7, 1905. Serial No. 248,833.

Claim.—1. A wheel rim or felly in two parts, comprising a detachable ring or flange in which the ring and the outer edge of the rim carry helically-formed ribs bearing mutilated screws engaging one with the other and a tire-engaging flange on each part by which the tire is wedged into and held firmly in position when the parts are screwed together.

805,878. Crank Shaft. Francis C. Osborn, Detroit, Mich. Filed August 25, 1903. Serial No. 170,741.

Claim.—1. In an engine, the combination of a hollow shaft, a disk secured to the same, a lug on said disk, a crank shaft revoluble within the hollow shaft, a disk secured to said crank shaft, means to prevent backward rotation of said shaft, a lug on said second disk, and a spring whereby the crank shaft may drive the hollow shaft, said lugs enabling the hollow shaft to turn the crank shaft.

805,944. Controlling Apparatus. Edward S. Clark, Boston, Mass. Filed February 3, 1905. Serial No. 243,975.

Claim.—1. In a safety controlling apparatus, a device for simultaneously locking the steering-wheel shaft in an operative position and releasing the starting mechanism, consisting of a hinged steering-wheel shaft, a hinged quadrant engaging therewith, means for compelling said engagement, said engagement in an operative position of said steering-wheel shaft releasing means for operating the starting mechanism.

805,978. Transmission Gear. Albert C. Menges, Grand Rapids, Mich., assignor to William Harrison, Grand Rapids, Mich. Filed September 14, 1904. Serial No. 224,458.

Claim.—1. In a transmission gear, the combination of a main shaft and a secondary shaft, driving gears carried by each shaft, friction disks upon the shafts adapted to engage with one another and mechanisms for engaging and disengaging the disks and for moving the gears on one of the shafts.

805,979. Carburetter. Albert C. Menges, Grand Rapids, Mich., assignor to William Harrison, Grand Rapids, Mich. Filed December 23, 1904. Serial No. 238,141.

Claim.—1. In a carburetter, the combination of a shell or case having separated valve seats therein, valves co-operating with said seats and having stems, the said valves controlling the admission of air and the outlet of the commingled air and gasolene, a gasolene valve located intermediate of the said valve seats and valves and regulating the supply of gasolene to the carburetter, movable projecting devices connected to the stems of the valves and located exteriorly of the carburetter, and a longitudinally slidable rod having cams thereon with which the free extremities of the projecting devices loosely engage, the said projecting devices being normally out of ngagement with respect to the cams and automatically returning to normal position when out of engagement with the cams to permit the valves to close.

805,981. Pump Attachment for Internal Combustion Engines. Reuben A. Mitchell and Lester L. Lewis, Oil City, Pa. Filed October 22, 1903. Serial No. 178,091.

Claim.—1. In a mechanism of the class described, the combination with a gas engine, of a cylinder connected to and communicating with the explosion end of the cylinder of said engine, a piston within said first-mentioned cylinder adapted to be actuated by the pressure from the gas engine cylinder, means actuated by the piston of said first-mentioned cylinder for compressing a charge of air or gas, and means for cushioning the termination of the operation of the compressing means.

806,013. Means for Securing Pneumatic Tires to Rims of Wheeels. Sheffield Smith, Providence, R. I. Filed March.

Claim.—1. The combination of the wheel and a pneumatic tire with a clamping hook, having its shank extending inwardly between the metallic tire of the wheel and the felly, and screw-threaded means also extending inwardly between the metallic tire and the felly, to actuate the said hook to clamping engagement with the edge of the cover of the pneumatic tire, for clamping the said edge to the wheel.

806,017. Ignition Plug. Charles F. Splitdorf, New York, N. Y., assignor to Electric Vehicle Company, Jersey City, N. J., a corporation of New Jersey. Filed March 7, 1903. Serial No. 146,778.

Claim.—1. In an ignition plug for explosive engines, opposed electrodes located in a secondary circuit of an induction coil, a plug conductor or conducting rod for one of said electrodes, an insulator for said conductor or rod, a metallic cap at the end of said insulator, the latter being separated from contact with said conductor or rod by an air space, and a binding post upon said cap to receive one of the terminals of said circuit.

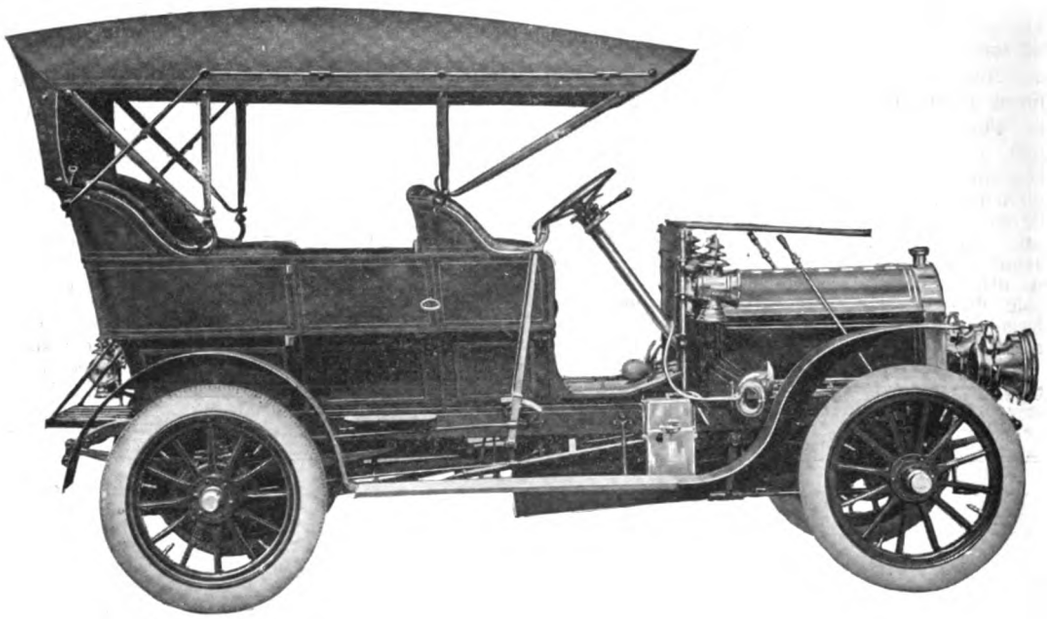
806,021. Differential Gearing. Robert Symmonds, Kenosha, Wis., assignor to Thomas B. Jeffery, Kenosha, Wis. Filed March 2, 1903. Serial No. 145,707.

Claim.—1. In a differential gearing, the combination with a hollow power transmission member, of a pair of meshed pinions, bearings formed integrally with said member in which said pinions are journaled, a pair of gears meshing with the respective pinions in said pair, aligned shafts upon which said pair of gears are respectively fixed, a bearing also formed integrally with said member and surrounding the adjacent ends of said aligned shafts between said gears, tubular supports surrounding said shafts, and roller bearings interposed between the portions of said shafts adjacent said gears and the surrounding tubular supports.

806,044. Speed Indicator. Henry Andrews, Hollis, Alaska. Filed February 8, 1905. Serial No. 244,737.

Claim.—1. A speed indicator for vehicles, comprising a casing, a dial in said casing, a pointer movable over the dial, a spindle on which the pointer is mounted, a lever integral with the spindle and adapted to be engaged by a part carried by a wheel of the vehicle, a ratchet wheel on the spindle within the casing, a pawl for engaging with the ratchet wheel, a coiled spring connection between the pawl and spindle and a radial arm wheeel adapted to be engaged by said part carried by the vehicle wheel and oper-

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Ottawa & Montreal,	Wilson & Co., 142 Bank Street.
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ating to release the pawl from the ratchet wheel.

806,079. Carburetter for Hydrocarbon Engines. Oscar Gavelek, Chicago, Ill., assignor of one-half to William L. Paul and Guy W. Mervin, Chicago, Ill. Filed July 25, 1904. Serial No. 218,048.

Claim.—A carburetter for hydrocarbon motors, comprising a cylindrical casing provided at one end with inlets for air and hydrocarbon liquid, respectively, and at its other end with an outlet for carburetted air, a throttle valve controlling said outlet, a valve controling said inlet for liquid, fluid pressure actuated means on said last-named valve for opening same, a longitudinally movable plunger disposed in the path of said valve and controlling the degree of opening movement of same, said plunger being threaded betweeen its ends and passing through a threaded opening in said throttle valve, means for holding said plunger against revolution, and means for holding said throttle valve against longitudinal movement, whereby when said throttle valve is turned said plunger will be moved longitudinally.

806,080. Vehicle Wheel. George L. Glaser, New York, N. Y., and John Olsen, Jersey City, N. J. Filed December 19, 1904. Serial No. 237,442.

Claim.—1. In a vehicle wheel hub, an outer rim having a chamber, an inner rim provided with projections extending into the chamber of the outer rim, a cushion between the rims, and a cushion in the chamber of the outer rim and engaging the projection of the inner rim.

806,088. Jack for Relieving Pressure on Pneumatic Tires of Motor Vehicles. John C. Wands, St. Louis, Mo. Filed May 18, 1905. Serial No. 260,995.

Claim.—1. The combination with a lifting jack base having a flange provided with a straight side and a curved portion, of an upstanding tubular threaded portion integral therewith, a threaded shank in the threaded tubular portion, outwardly curved handholds carried by the shank, integral shouldered jaw-engaging portions above the handholds and an arcuate jaw rotatably carried thereby; substantially as described.

806,089. Device for Relieving Pressure on Motor Vehicle Tires. John C. Wands, St. Louis, Mo. Filed May 27, 1905. Serial No. 262,610.

Claim.—1. A device of the class described comprising a base having a horizontal hub-receiving portion and an inclined portion for guiding the wheel hub onto the horizontal portion; substantially as described.

806,101. Endless Solid Rubber Tire. Robert D. Bradley, Canton, Ohio. Filed April 10, 1905. Serial No. 254,662.

Claim.—As a new article of manufacture, a tire for children's vehicles consisting of a solid endless annular body of rubber adapted to be rolled onto a rim and having a lining of closely woven fabric cemented to the inner circumference thereof and covering the entire inner surface of the tire.

806,125. Rotary Explosive Engine. Fay O. Farwell, Dubuque, Iowa, assignor of one-half to The Adams Company, Dubuque, Iowa, a corporation of Iowa. Filed April 16, 1904. Serial No. 203,391.

Claim.—1. An explosive engine, comprising a mixing chamber and an explosion chamber, an inlet valve controlling the passage between said chambers, an exhaust valve for the explosion chamber, and a cam ring common to both of said valves and having projections of different heights controlling the opening and closing of the respective valves, said cam ring having adjustable means for varying the period of time the inlet valve is held open during the compression stroke of the engine.

806,136. Vehicle Hub. William T. Hanna, Cincinnati, Ohio, assignor to Martha A. Hanna, Cincinnati, Ohio. Filed Feb. 27, 1905. Serial No. 247,431.

Claim.—1. The combination of a short axle haing in its periphery a longitudinal groove intercepted by a bridge, a hub to fit over the axle and having a groove to form a keyway with the groove in the axle, keys seated in the keyway upon opposite sides of the bridge and nuts to engage the hub and to abut against the keys.

806,139. Device for Vaporizing Liquids. Albert Hayes, New York, N. Y., assignor, by mesne assignments, to Theodore J. Lindley. Filed February 27, 1905. Serial No. 247,514.

Claim.—1. In a device for vaporizing liquids, the combination of an air conduit, a diapnragm in said conduit having therein an air passage provided with a valve seat, means for supplying liquid to the valve seat, a lift valve for the ale seat arranged to control the passage of air through the conduit and means carried by the valve adapted to be acted on by air passing through the conduit to rotate the valve to distribute the liquid.

806,167. Piston. Dudley R. Morrison, Hartford City, Ind. Filed March 17, 1904. Serial No. 198,615.

Claim.—1. An engine pitman having a fixed pin at its piston end, and a piston having journal boxes at each side of the piston t receive the ends of said pin, means extending to that end of the piston which the pitman enters, for adjusting said boxes, and bolts having heads projecting from the same piston end for adjusting said means.

806,190. Variable Speed Mechanism. Richard E. Rosewarne, Covington, Ky. Filed September 29, 1904. Serial No. 226,502.

Claim.—1. The combination with the driving element and the driven element, of a circumferentially interrupted gear having an engaging portion of varying diameter and carried by one of said elements, and pinions for contact with the engaging portion movable along the periphery of said gear and connected with the other element.

806,195. Motor and Engine. Georges O. de Sanderval, Mont-Redon, France. Filed October 15, 1903. Serial No. 177,183.

Claim.—1. A combined internal combustion and hot air engine comprising side-by-side pistons reciprocable in said cylinders, a common crank shaft, a valve intermediate the two cylinders adapted to open automatically under the effect of an explosion in the internal combustion cylinder, exhaust valves for said cylinders and an air inlet valve for the hot air cylinder, and positive means for cutting out the hot air cylinder and allowing its piston to run free when the gas cylinder is working, substantially as set forth.

806,302. Transmission Mechanism for Automobiles. Zadock B. Starr, Gloversville, N. Y. Filed August 12, 1904. Serial No. 220,554.

Claim.—1. In an automobile, a pair of disks, a crank shaft upon which said disks are mounted, two shafts, a friction roller at each end thereof, two pair of disks connections between each shaft carrying said pairs of disks with the rear wheel of the automobile, said friction rollers mounted in such a manner that one roller on each shaft shall engage the disks mounted on the crank shaft on opposite sides thereof, the other friction roller on each shaft engaging one of the pairs of disks, respectively, substantially as described.

806,308. Gasolene Burner. Rollin H. White, Cleveland, Ohio, assignor to The White Sewing Machine Company, Cleveland, Ohio, a corporation of Ohio. Filed December 3, 1900. Serial No. 38,408.

Claim.—1. The combination of a main burner, a pilot burner tube which passes vertically through the same and is open at both ends and has on its lower end an internal drip cup, a pilot burner in said tube, which burner contains near its upper end a port which partly surrounds the burner, a discharge pipe connected with one end of said port and which discharges into the inlet of the pilot burner, and a supply pipe having one branch which is connected with said port, a second branch adapted to discharge into said drip cup, and a third branch which is coiled over the pilot burner and discharges into the inlet of the main burner, and three valves for severally controlling the flow of the fuel through the said three branches, substantially as and for the purpose specified.

806,316. Transmission Mechanism. Charles E. Bertels, Wilkesbarre, Pa. Filed May 31, 1905. Serial No. 263,037.

Claim.—1. In a device of the class described, a driving shaft and a driven shaft spaced apart and arranged in longitudinal alignment an intermediate mechanism including two shafts mounted for independent rotation and disposed in longitudinal alignment with said driving shaft and driven shaft, means for connecting and disconnecting said intermediate shafts, a clutch element between said driving shaft and one of said intermediate shafts, a clutch element between said driven shaft and the other of said intermediate shafts, and speed-changing mechanism associated with said intermediate shafts.

806,351. Vehicle Tire. Albert de Laski, Trenton, N. J., assignor to The de Laski and Thropp Circular Woven Tire Company, Trenton, N. J., a corporation of New Jersey. Filed August 11, 1904. Serial No. 220,326.

Claim.—1. A clincher tire comprising a body composed of a heavy circular woven fabric, a restraining jacket applied thereon consisting of courses of threads extending obliquely to the longitudinal axis of the tire and a tread applied on the restraining jacket, the whole being bound together in a coherent mass.

806,352. Pneumatic Tire. Jean P. Le Grand, Levallois-Perret, France. Filed July 2, 1904. Serial No. 215,199.

Claim.—1. In combination with a pneumatic tire, an exterior flexible protective strip, pins traversing the same at intervals, and a strap lying along the inside of the tire wall and carried through said wall and around said pins, substantially as described.

806,378. Automobile Street Sprinkler. John J. Sullivan, Chicago, Ill. Filed April 27, 1905. Serial No. 257,718.

Claim.—1. In a street sprinkler, the combination with a horizontally disposed cylindrical tank, a body frame consisting of side sills and end sills formed of I-beams and bolsters mediate said end sills formed of drop frame truss-shape construction, and endless bands surrounding said tank and having offsets that rest upon said side sills, of power generating apparatus and transmission gear actuated thereby, both of which are supported by said bolsters, a drive axle driven by said gear, sprinkling devices connected with said tank, and means which, while said sprinkler is in motion, force the water out of said sprinkler under pressure.

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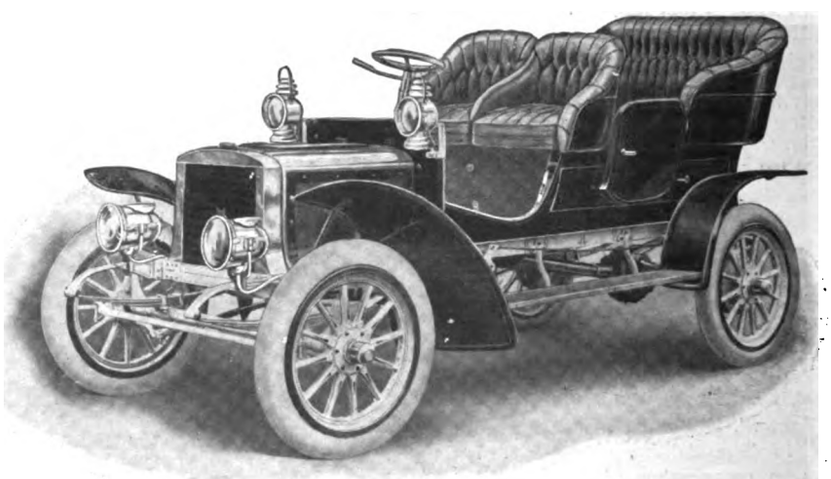
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WAVERLY electric runabout of the type styled "Speed Wagon"; new this season an in perfect condition; batteries, thirty cells of 9 p. v.: buggy top. Apply to WM. A. TUCKER, 53 State St., Boston, Mass.

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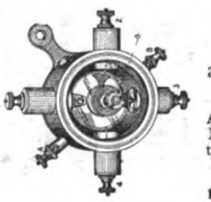
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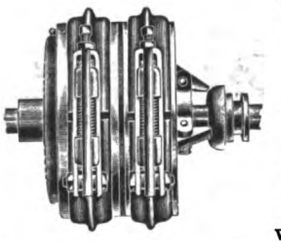
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If you have any trouble with your ignition, write us about our **Apple Automatic Battery Charger.** No trouble to put on any car or engine. For full information write, Dayton Electrical Mfg. Co., 91 Beaver Bldg., Dayton, O.
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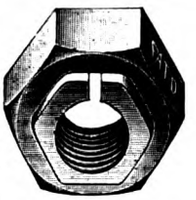
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Style
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Quality

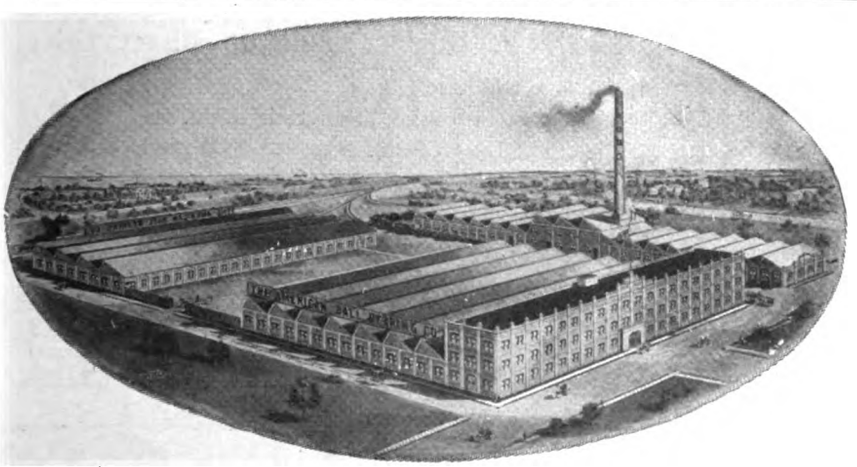
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The Ball Improved Transmission
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—FOR—
Automobiles and Motor Boats
MADE ONLY OF SPUR GEARS
Patented April 19, 1901; Nov. 3, 1903; Jan. 12, 1904; Feb. 23, 1304.
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Western Agts.: J. H. Neustadt Co., St. Louis, Mo.



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caused by the loss of a nut off the steering gear, would have been avoided by the use of **COLUMBIA LOCK NUTS.**
They are the only nuts that can forever withstand the shakes and strains to which an automobile is subjected. Locks automatically and absolutely Made in two pieces, it combines the three forces of wedge, screw and lever, forming a combination lock of immense power.
Made in all sizes, and of universal application. Write for catalogue.
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ABSENCE OF BACKLASH
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This Letter is a Mild Sample.

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Gentlemen—My family are not particularly fond of driving in the cold weather, and I have, therefore, laid up my car until Spring. As I had the honor of signing the first Canadian order for a Royal Tourist, thought you would be interested in what I thought of the machine, after one season's experience, and have only to repeat what Prince Louis of Battenberg had to say when travelling in the machine, "a wonderful car, good enough for any man living." Quite a number of your cars have come to Toronto, and the above few words express the opinion, I think, of all the owners.

Wishing you the success that your machine should bring, I am,

Yours truly, WM. J. SMITH.

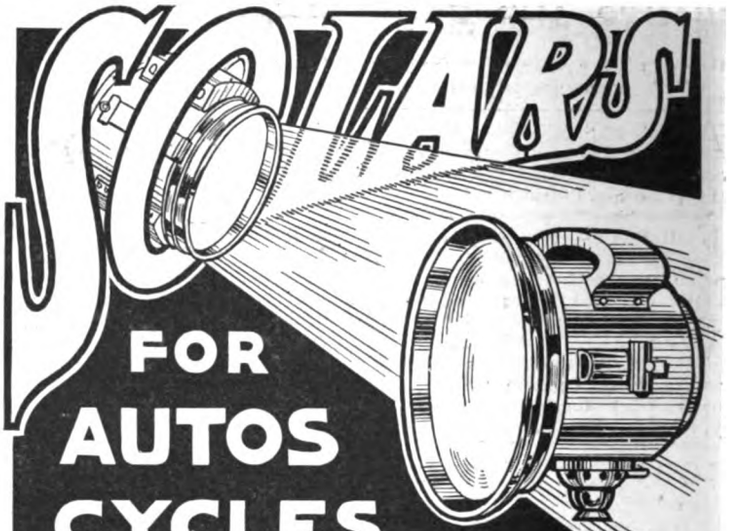
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THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

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AGENTS: C. A. DUERR & CO., New York, N. Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE & SUPPLY CO., Lim., Toronto, Ont.; MOTOR SHOP, Philadelphia, Pa.; WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS-PIERCE & CO., Syracuse, N. Y.; THOMPSON SCHOEFFEL CO., Rochester, N. Y.; GUS BOYER, San Francisco, Cal.; Member A. L. A. M. Send for catalogue.

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Write us to-day for prices on our 1906 line.

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Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

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THE Modern Car.

40-45 H. P. Double Chain Drive.

112 inch wheel base.

Individually cast cylinders. Battery and high tension magneto ignition.

Individually designed bodies.

PRICE, $7,500.00.

28-32 H. P. Double Chain or Direct Drive.

102-inch wheel base,
Battery and low tension magneto ignition.
Bodies to your own taste.

PRICE, $4,000.00.

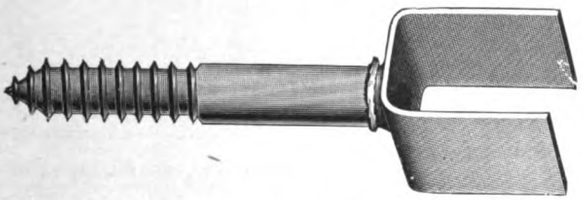
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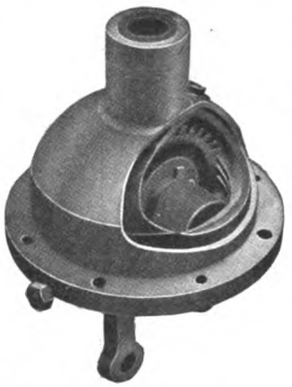
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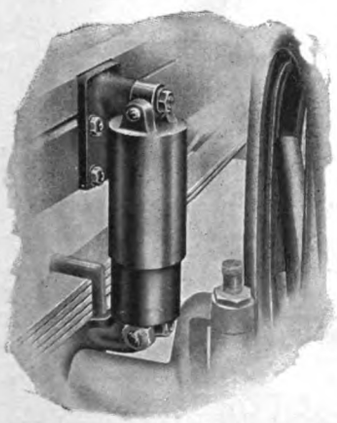
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THEY TRANSFER THE LOAD and strain from the springs to the axles.

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THERE ARE NO ADJUSTMENTS.

This should interest you because:—
It adds to your comfort and safety,
It effects a direct saving in "up keep."

Write for full particulars.

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Yes, he will be there WITH HIS TOPS.

You can't help but find him, and his Wonderful Tops;

"MADE THE SPRAGUE WAY,"
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You might better wait and buy a SPRAGUE TOP than to buy an imitation and then wish you HAD bought a SPRAGUE TOP.

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CALL AND SEE THE DIFFERENCE.

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TWO PAIRS OF CHAINS IN 75,000 MILES.

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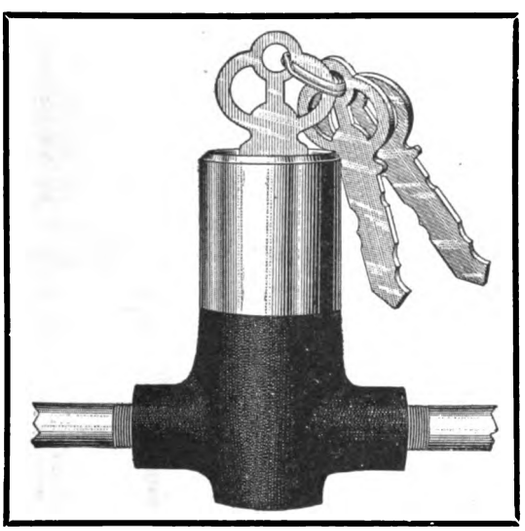
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1906 Models—40 and 60 H.P.

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LOCK YOUR ENGINE BEFORE YOUR BOAT IS STOLEN

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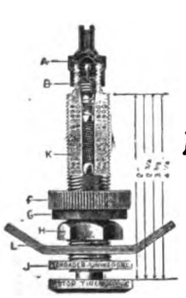
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THE WHITLOCK COOLER

was used on the

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It was never touched during the race. It did its full duty.
It held its water and kept the engine cool.

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We make coolers of the HIGHEST EFFICIENCY.

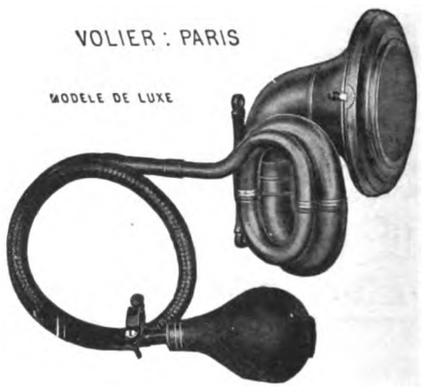
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continuously for the seasons of 1903, 1904, 1905, 1906.

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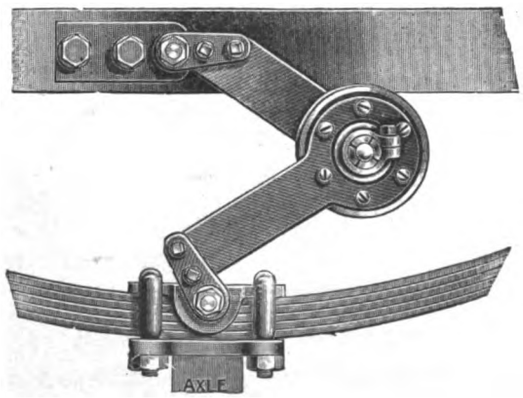


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On Long Island Course. Sat., Sept. 23, Average Time, Almost 57 Miles per Hour,

The cars of these two leaders were equipped with the TRUFFAULT-HARTFORD SUSPENSIONS, which enabled them to win. Only 59 seconds separated them.

1st. DINGLEY, (Pope-Toledo, 60 H.P.) 2 Hours, 50 Seconds.
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The third car ran 19 minutes behind the leader
AND WAS WITHOUT THE TRUFFAULT-HARTFORD SUSPENSIONS.

Racing or Touring, f you want to Finish Among the Leaders Equip Your Car with

THE TRUFFAULT-HARTFORD SHOCK ABSORBER.

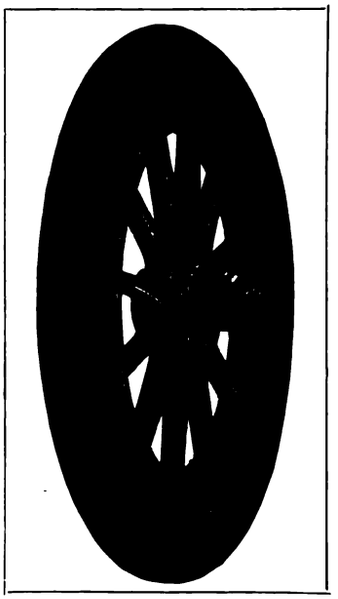
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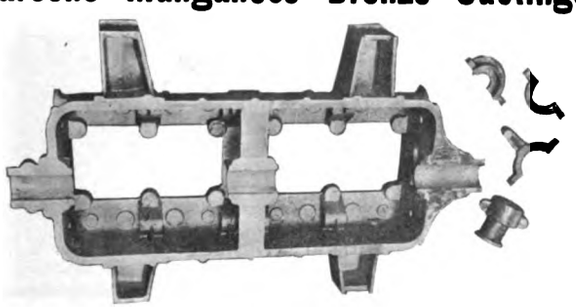


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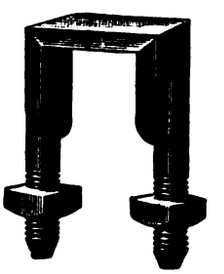
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Satisfaction Guaranteed.



Thousands of our stock yokes are now in use, having been supplied to the leading automobile manufacturers.



Have you secured our prices?

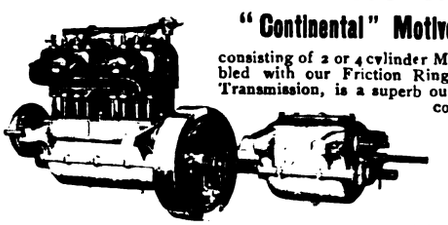
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Feed oil with absolute certainty, in adjustable, measured quantities, regulated by the operator without stopping the motor, and at intervals proportionate to the speed of the motor. **No valves to clog.** They do not employ gravity, nor pressure, but **shoot** the oil to the bearings. Oil thickened by cold does not stop their perfect operation. **Smoke is prevented.**

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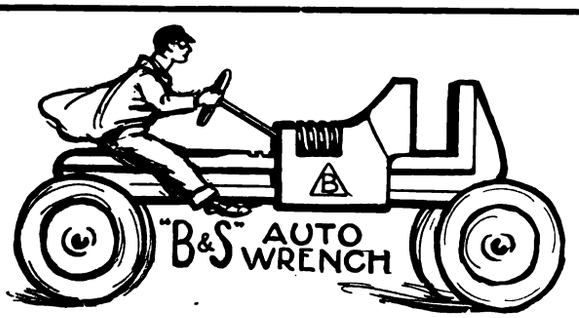
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consisting of 2 or 4 cylinder Motor, (10 to 40 H. P.) assembled with our Friction Ring Clutch, and Shaft Drive Transmission, is a superb outfit for your car. Sold in combination or separately.

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LIGHT WEIGHT
HIGHEST EFFICIENCY
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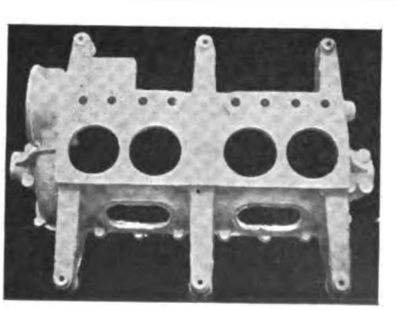
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The wrench that gets there. Does your 1906 kit contain it?

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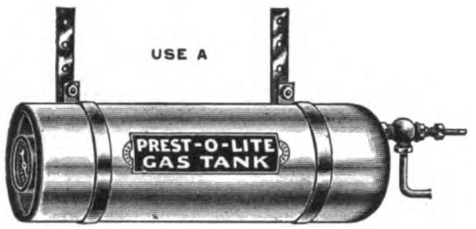
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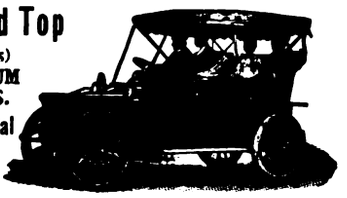
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In the South, Manufacturers of all kinds are in position to Assemble their Raw Materials Cheaply, while Exceptional Transportation Facilities place them in touch with all the Great Markets, North, East and West.

THE SOUTHERN RAILWAY

Traverses Sections of the South which are growing faster than any other part of the United States.
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M. V. RICHARDS, Land and Industrial Agent, Southern Railway Company, Washington, D. C.
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"KAL-KRYSTAL."
MAKES THE BEST NON-FREEZING SOLUTION FOR AUTOMOBILE USE.
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SIMPLY BUILT. SIMPLY RUN.
PRICE, $1500.

Air cooled. 16 horse power developed. Beautiful in design and finish. Easy riding. Speedy. Durable and dependable. We build it.

MARION MOTOR CAR CO., INDIANAPOLIS, IND
Our interesting catalogue yours for the asking.

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The Baldwin Chain Company
— MAKE —
Automobile Chains. Sprockets, Spur and Bevel Gears.
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AUTOMOBILE users, drivers, repairmen, chauffeurs and others wanted all over the country; 50,000 machines built this year in United States, affording great opportunities for men trained in this coming business; six cents a day will qualify you for good wages in this field; in which the demand is such that ability counts ahead of pull and length of service. For full particulars, address THE CORRESPONDENCE SCHOOL OF AUTOMOBILE ENGINEERING, Suite 1357, Flatiron Building, New York City.



Every Automobilist's Automobile

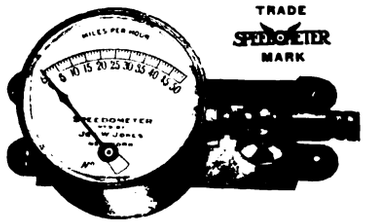
should be equipped with a JONES SPEEDOMETER for the reason that it is recognized as the only *practical* speed indicating device.

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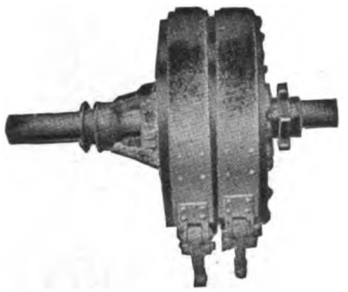
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Two Speeds and Reverse.



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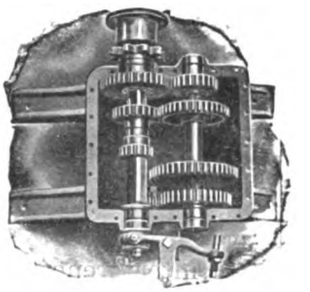
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Direct Drive. Three Speeds and Reverse



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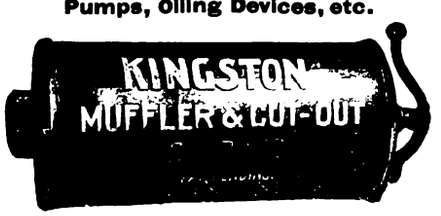
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Pat. Jan. 20, 1901.



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An instrument that will enable you to determine the grade per cent. you are ascending or descending.

Sent postpaid on receipt of price, $1.50.

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Steel Balls,
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PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness. at first modestly spreading its mellow light and. growing bolder, bursts forth in one pure sheen of grandeur.

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We make parts from your own design from either brass or aluminum

On Contract Basis.

Our positive power driven sight feed **OILER** will interest you. Write for description.

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OUR CHAINS OUTWEAR ALL OTHERS

Replace your worn out chain with a **"DIAMOND,"** which fits any standard sprocket.

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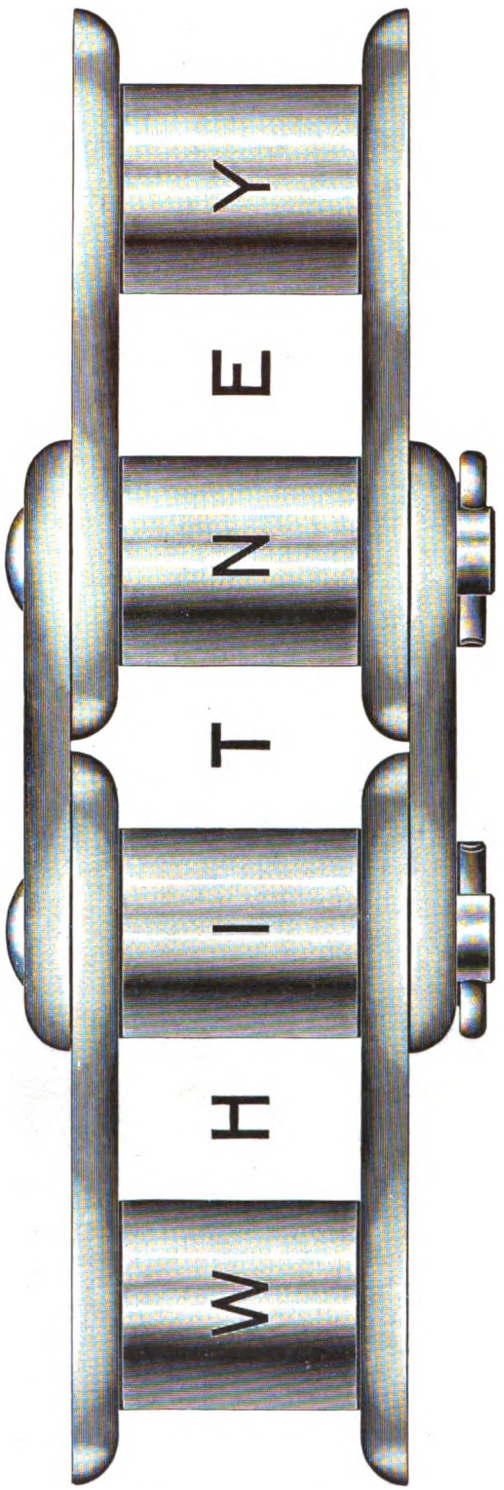
WITHERBEE IGNITION CO.,
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Thousands of Chains have been damaged by interferences and unfavorable conditions.

For the future we demand Sprockets better than the average of the past, and we will no longer shield manufacturers who neglect to give this question proper attention.

In designing your car select the chain you consider right and leave plenty of space for a wider and larger chain.



Are your Sprockets cut to the correct bottom diameter with cutters correct in form?

Are your Sprocket teeth too wide and too straight on the sides?

Have the sharp corners of your sprocket teeth been removed after cutting?

Are your sprockets in line?

As a manufacturer do you inspect every sprocket by comparing it with a correct model or master gauge, or do you accept anything so long as it has the right number of teeth?

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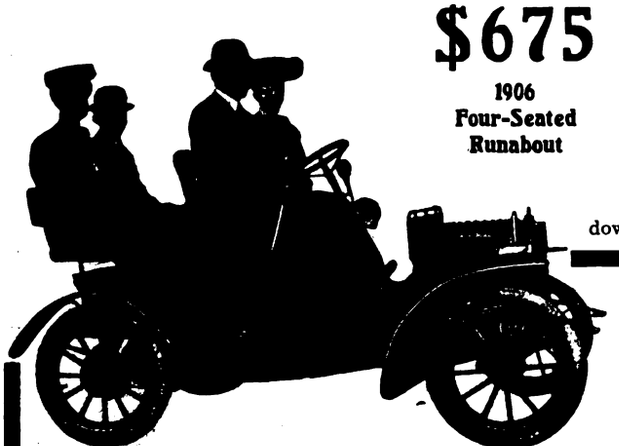
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WE most heartily extend to our patrons and friends everywhere our sincere best wishes for a Holiday Season of surpassing Good Cheer.

We are not unmindful of the good-will that has been so generously manifested on the part of our patrons during the past year; and for this, and for the constantly increasing liberality of their patronage, we are deeply grateful.

We pledge you that an earnest effort will be made to merit a continuance of your valued confidence.

Morgan & Wright
Chicago



$675
1906
Four-Seated
Runabout

REO

The extra seat carries two people facing forward, and when not in use is folded down snugly out of the way. 8 h. p., 1000 pounds, 25 miles per hour.

5 Prizes out of 7.

In the New York Motor Club's great six-day economy test

The Reo 8 horse power Runabout (shown above) carried 4 passengers 682 miles for $3.81½ per passenger.

By this feat this car won two medals—**The Gold Medal** for all cars up to $1500 in price; and the **MacMurty Medal** for least ignition trouble, having none at all.

The Reo 'Bus with exactly the same horse-power as the Touring Car referred to below carried ten passengers 682 miles for $2.93 per passenger (including ferriage).

And won three prizes:—The **National Trophy** for Economy per passenger; the **W. J. P. Moore Trophy** for Economy per mile, including tire charges, which were only 4 3-10 cents; and the **Morgan Trophy** for the least gasoline per passenger, which cost only $1.60.

Thus 5 prizes out of 7 went to the splendid REO capacity and power.

WRITE FOR REO BOOK THAT TELLS WHY.

REO 1906 TOURING CAR, 16 h.p., 1,600 pounds, 90 inch wheel base, 5 passengers, side-door detachable tonneau, speed 35 miles per hour, $1250.

REO Motor Car Co., Sales Department, Lansing, Mich.
R. E. Olds, Pres. R. M. Owen, Sales Manager.

Agencies throughout the United States.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who have the right to manufacture and sell G & J Tires:

G & J Tire Co.
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Fisk Rubber Co.
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Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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ELMORE ANNOUNCEMENT.

During the New York and Chicago Automobile Shows, 1905, we were approached by hundreds of automobile owners, saying, "If you people would only put out a four-cylinder two-cycle car, you would simply have the rest beat out of sight. It would be practically the same as an eight-cylinder of the four-cycle type, with about one-fourth the complication, and as steady running as a clock." Well, we have built the four-cylinder, and it is all you expected, and more. You may have already heard this from persons who have seen and ridden in it, but you have never heard us say so. We, therefore, take this occasion to announce that it is our firm conviction that not only have we exceeded the most sanguine expectations of our friends, but that in all essential points we have the best four-cylinder car ever built.

Our two-cylinder two-cycle car is a worthy successor to our Model 11, which, for reliability, as is well known, has never been excelled. It is in the details of construction that we have made our great advance, and in changing from chain to shaft drive we accede to the popular demand for a two-cylinder car of that type. Among the details we have improved is in using a new planetary gear running in oil, a popular make of circuit breaker, heads cast solid with cylinder, and on both cars we use the famous Hill Precision Oiler. But, as said above, there are so many things we want to talk to you about that we hope you will at once get into communication with us.

We have made so many improvements on our 1906 Models that we have not the space to speak of them here, but our literature will explain them all in such a manner that you will readily see we have a car with the exact features that have been talked of for years as being most desirable, but are impractical on any four-cycle car on account of complication, rythm of motion, power, etc., but which come perfectly natural to our two-cycle. The action and power of an eight-cylinder car with one-fourth the complication does it all. Ask for literature.

NOTE.- Will exhibit in New York City at Madison Square Garden ONLY.

Members Association of Licensed Automobile Manufacturers.

ELMORE MFG. COMPANY, - - - Clyde, Ohio.

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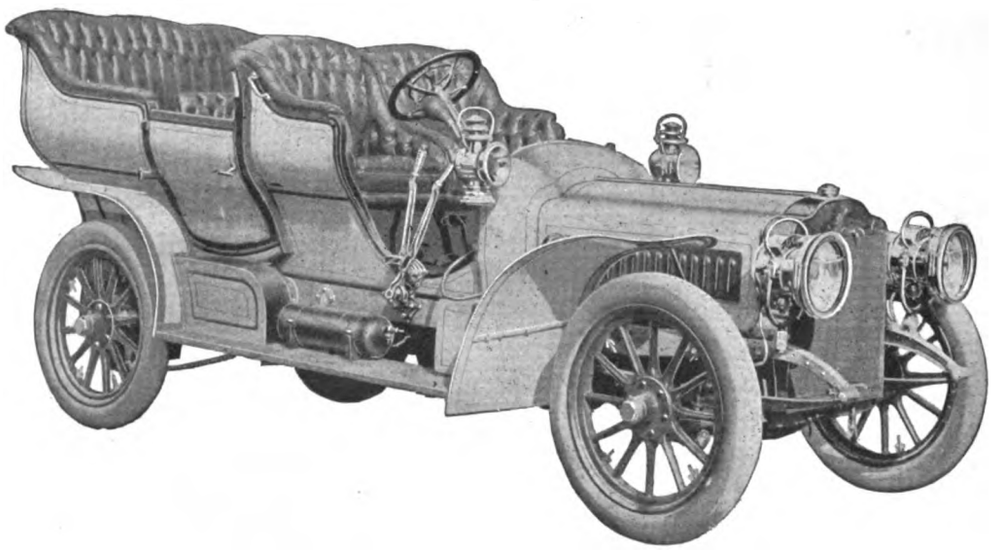
YOU MUST TAKE A RIDE

in the

50 HORSEPOWER

THOMAS FLYER

to fully understand and appreciate its powerful construction perfect mechanical parts and excellent finish.



PRICE $3500.00 f. o. b. BUFFALO.

As a result of three years of constant study, ambitious determination and hard work, we have in the new Thomas more fine bearings, more improved devices proving power, safety, comfort and durability than any automobile made at home or abroad.

"Every stock Thomas car guaranteed to show sixty miles an hour before leaving the factory."

All we ask is an opportunity to show you and every man that we can prove the statement—

"The Nearest Approach to Automobile Perfection."

E. R. THOMAS MOTOR CO.,

1416 Niagara Street, **BUFFALO, N. Y.**

Largest Manufacturers of 50 Horsepower Cars in the World,

Members Association of Licensed Automobile Manufacturers.

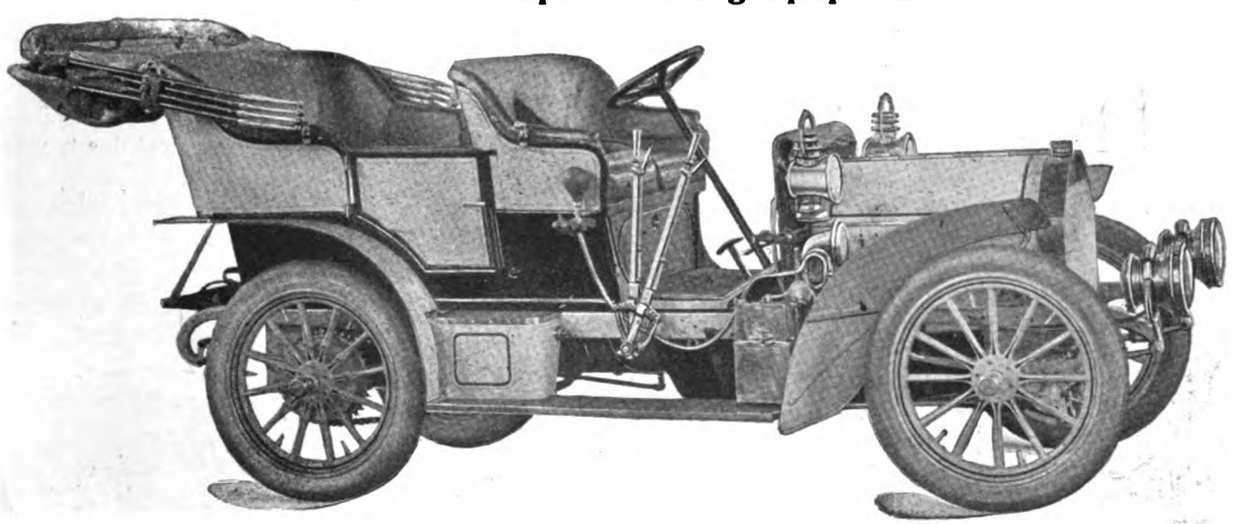
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. 30-35 H. P., $5,000,

Both with complete touring equipment.



TYPE E. 15-20 H. P. $3000.

Top and Luggage Carrier extra

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; extra wide doors; fitted with top irons; color and striping optional.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.
CONTROL, spark and gas levers on steering wheel.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5 to 7; fitted with top irons; extra wide doors; color and striping optional.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break, with iridium contacts.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.
CONTROL, spark and gas levers on steering wheel.

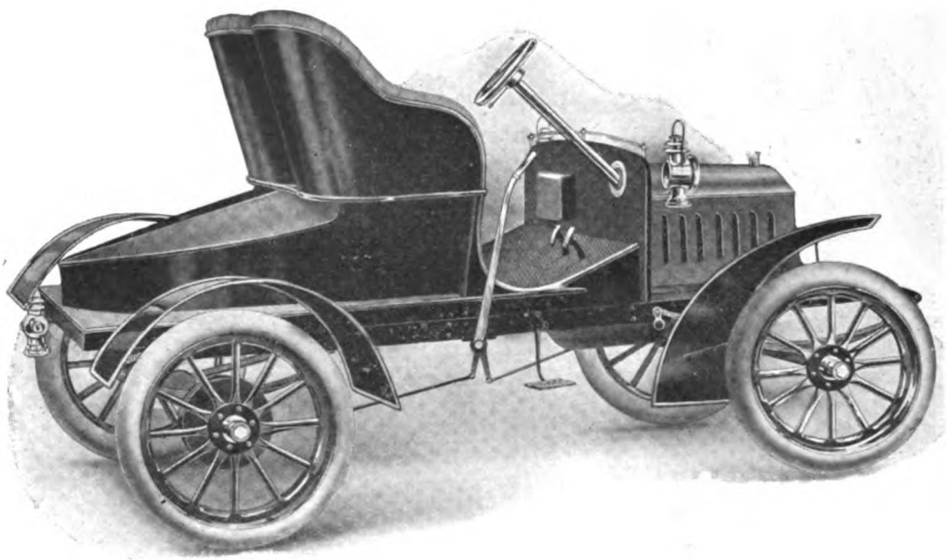
The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 240 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

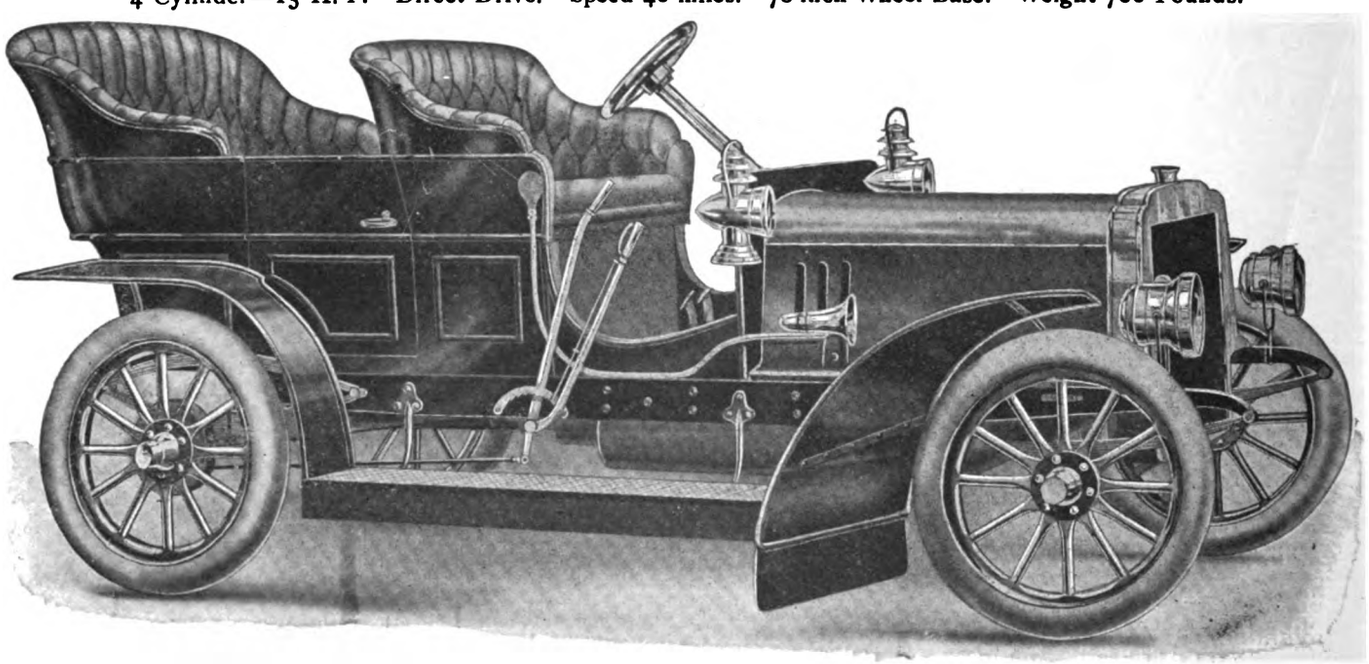
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The Ford 4 Cylinder Runabout

This car—Model N—is the biggest revelation yet made in Automobile construction. A car of this type for less than $500.00 seemed an impossibility, but here it is.

4 Cylinder—15 H. P. Direct Drive. Speed 40 miles. 78-inch Wheel Base. Weight 700 Pounds.



FORD MODEL K.

Six cylinders—40 H. P. 4 to 50 miles per hour on high gear. Perfected magneto ignition. Mechanical oiler. 114 inch wheel base. Luxurious body for 5 passengers. Weight 2,000 pounds. Price, $2,500.00.

No further particulars will be given until these cars are shown for the first time at the Automobile Club of America's show at the 69th Regiment Armory, New York, Jan. 13th to 20th.

DELIVERIES FOR MODELS N AND K WILL NOT BE MADE BEFORE MARCH.

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

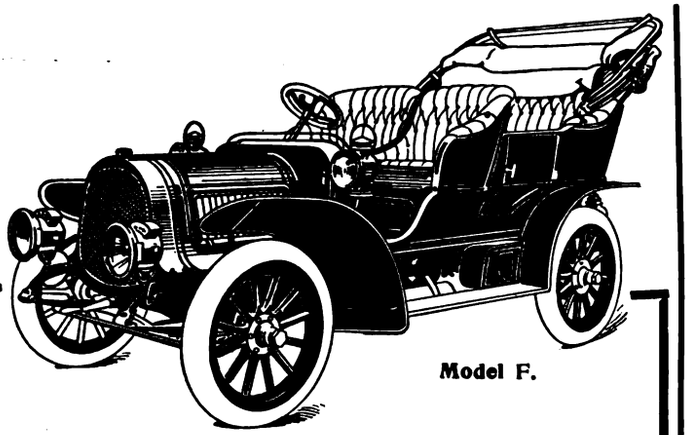
FORD MOTOR COMPANY, Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1725 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City.

Canadian Trade supplied by Ford Motor Co. of Canada, Ltd., Walkerville, Ont.

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Model F.

Pope-Hartford Model F

is the result of our 28 years of experience in making and marketing mechanical vehicles and is the latest product of our famous Hartford Factories. **Motor:** consists of 4-cylinder, vertical, water cooled engine with cylinders cast in pairs; all gears encased; brake test 28-30 H. P. **Transmission:** sliding gear, three speeds forward and reverse. **Carburetor:** specially designed, insuring economy in fuel consumption and maximum power. **Control:** throttle and ignition levers on single sector that does not revolve with wheel. **Drive:** bevel gear through propeller shaft to the rear axle. **Tonneau:** non-removable, dust proof, double side entrance. **Design:** artistic in conception and execution.

While great attention has been given the essentials of construction it will be found that no detail has been overlooked. Everything that will contribute to the user's comfort and convenience has been embodied in this up-to-date car. **Price $2500.**

Pope-Hartford Model G

is our 2-cylinder, opposed, 18 H. P. touring car. The engine is under the hood and all parts are accessible for inspection and repair. This is our dependable 2-cylinder machine of last year with such minor changes as has been suggested by a seasons use. **Price $1600.**

We exhibit in New York at Madison Square Garden only.

POPE MANUFACTURING CO.

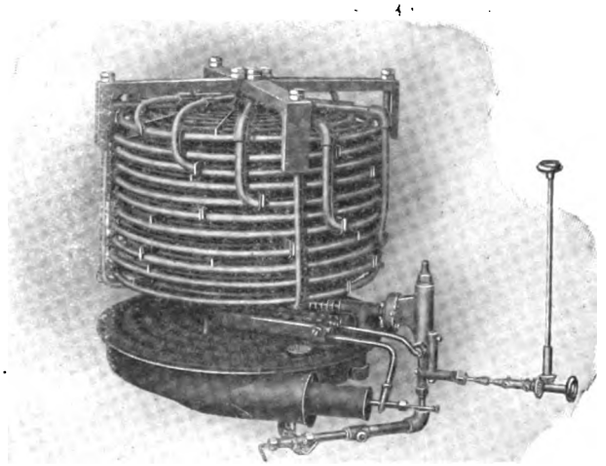
HARTFORD, CONN.

BOSTON, MASS., 223 Columbus Ave.
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A. L. A. M.

The Incomparable WHITE

The Car for Service.



WHITE GENERATOR

Above is illustrated the generator of the White steam car, together with burner, vaporizer, pilot-light and gasolene connections. A glance is sufficient to show that the White generator is totally unlike any other boiler ever designed. We might point out how wide this difference is by calling attention to the fact that in the White generator the water is at the top and the steam at the bottom. In every other type of steam-making apparatus, water is at the bottom and steam at the top.

If the coils of the White generator should be unwound and straightened out, the generator would be seen to consist of a single long piece of steel piping. Could anything simpler than this be conceived? The capacity of the tubes is comparatively small; i. e., the amount of water and steam contained therein at any one time is small. The tubes will safely withstand a pressure of many times that which it is possible for the steam to attain. Could any safer arrangement be imagined?

As regards the superior reliability of the White system, that is a matter which has been amply demonstrated by the continuous victories and notable achievements of six successive models of "The Car for Service."

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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QUEEN
AUTOMOBILES
FOR 1906

3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P.

Price, $2,000.

SPECIFICATIONS

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

C. H. BLOMSTROM MOTOR CO.,

DETROIT, MICH.

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Diamond

SIDE WIRE SOLID TIRES

For Trucks and Commercial Vehicles. Conceded to be the Best Motor Truck Tire in the market today.

The Rubber is strictly Our Own Stock. It has never been duplicated and Frequent Attempts at imitations have but emphasized Diamond Superiority.

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CHICAGO—167-169 Lake St.
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SAN FRANCISCO—608 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
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Northern

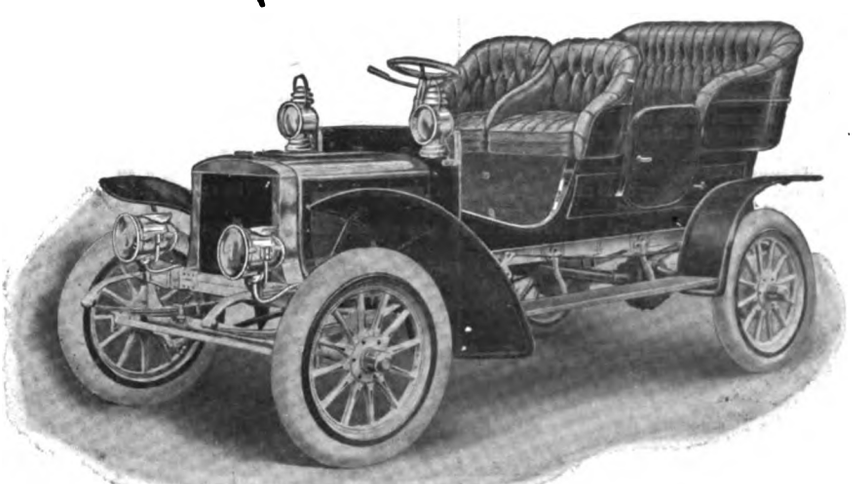
A car especially and suitably designed for American roads. Has less parts—more compactness—more room for entrance—more road clearance than any other car—Northern encased and protected mechanism—and Three-point motor support insure a perfect alignment of mechanism under all conditions.

Four full elliptic springs—four inch tires—our plan of placing all mechanism under front hood—and a twenty-four inch fly wheel reduce vibration to the minimum By far the best designed, best equipped and best finished two-cylinder car ever made

1906 MODELS:

Model "K" 30 h. p. Touring Car with gas and oil lamp equipment, ... $3000
20 h. p. Limousine, ... $2500
20 h. p. Touring Car with gas and oil lamp equipment, ... $1800
7 h. p. Sturdy Northern Runabout with lamp equipment, ... $650

For details of our cars and other information write us at once.



The Silent Northern Touring Car. 20 h. p. Double Side Entrance. $1,800.

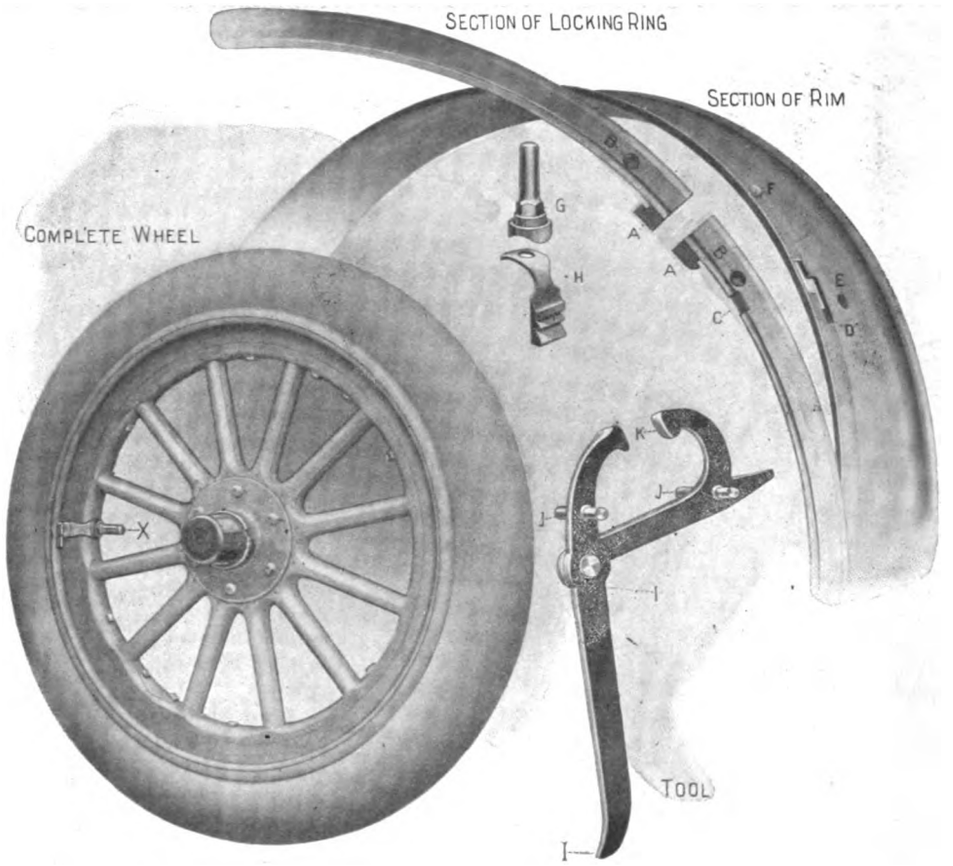
NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Members Association of Licensed Automobile Manufacturers.

New York City Agent: PETER FOGARTY, 142 West 38th Street.

WE WILL EXHIBIT AT MADISON SQUARE GARDEN, NEW YORK, JAN. 13 TO 20, AND AT CHICAGO IN FEBRUARY.

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YOUR TIRE OFF AND ON IN LESS THAN A MINUTE

Tells exactly what is accomplished by means of the

Goodrich Quick Detachable Construction

And a visit to our Exhibit at the New York Automobile Show, Madison Square Garden, will afford you the opportunity to see our claims proved.

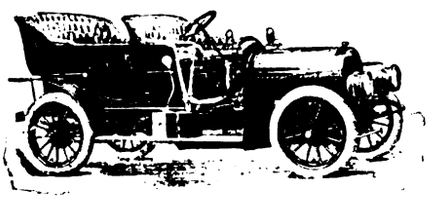
Perhaps you may wish to make dead sure and detach and attach the tire yourself. It is a pleasant little pastime with all the old time hard work features cut out. You will enjoy the experience and be impressed with the fact that the Goodrich Quick Detachable Tire and Rim is a great achievement in automobile tire building.

Space in Central Boxes directly over Madison Square entrance.

The B. F. Goodrich Co.

AKRON, OHIO.

NEW YORK, 66-68 Reade St and 1625 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 392 Mission St.
BOSTON, 161 Columbus Ave.
PHILADELPHIA, 909 Arch St.
CLEVELAND, 416 Erie St.
CHICAGO, 141 Lake St.
DETROIT, 80 E. Congress St.
DENVER, 1444 Curtis St.
LONDON, E. C., 7 Snow Hill.



What Royal Tourist Owners Are Writin'.

"More pleased with Royal than any car I have ever owned. Have owned about 25, both foreign and American."

"Mine has run about 4,900 miles this season, and has had absolutely no repairs."

"Since June 2nd I have toured about 6,000 miles, and during this time I have never once stopped on the road to make a single repair or adjustment."

"The Royal Tourist which I purchased of you has run about 6,000 miles, over hard country roads and sharp hills, and total cost of repairs will not exceed $3.00."

"I have run this car about 6,000 miles and have given it some hard usage. The expense for repairs has been $3.25."

"Am delighted with my Royal. Have run it nearly 2,000 miles, and have had no repairs."

"We have been over 7 500 miles, at this date, without a repair or replacement of any kind or description, except to tires."

Ask any of our Agents to show you reproduction of letters from which these remarks were taken.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., New York, N. Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE & SUPPLY CO., Lim., Toronto, Ont.; MOTOR SHOP, Philadelphia, Pa.; WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS-PIERCE & CO., Syracuse, N. Y.; THOMPSON SCHOEFFEL CO., Rochester, N. Y.; GUS BOYER, San Francisco, Cal.; Member A. L. A. M. Send for catalogue.

THE 1906 DUQUESNE

Four-Cylinder Runabout is a Winner

Light
Strong
Roomy
Powerful

90 inch wheel base. Four-Cylinder. Four-Cycle. Air-Cooled.
Made of the best material obtainable, and strictly high grade in every particular.
Starts from the seat by a foot lever, no cranking.
Full control on steering column, no side levers.
Speed, 40 miles per hour.
Price, complete with cape top, $2,000.00.

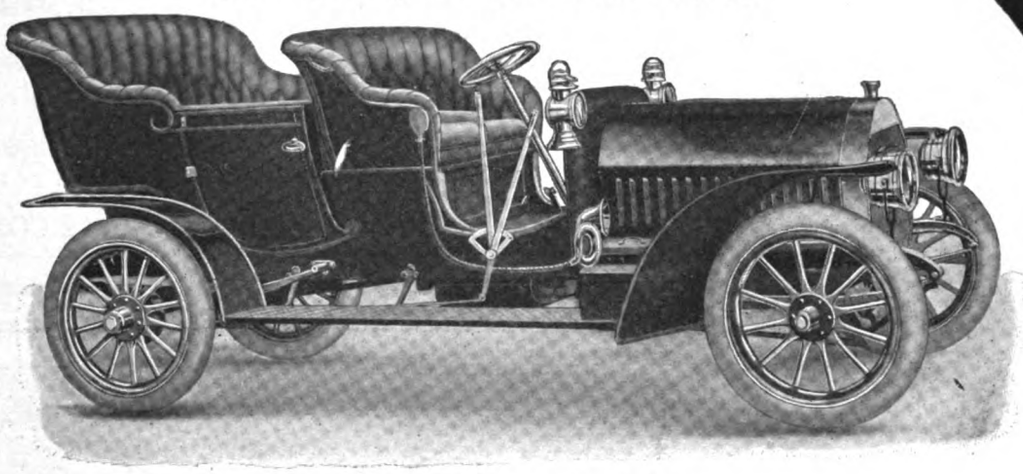
Duquesne Construction Co.

JAMESTOWN, N. Y.

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Wayne

ONE OF OUR 1906 MODELS



Model F $3500.00.

MOTOR, 4 cylinder, vertical cylinders, 5½x5, cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark, with quad coil and storage battery. TRANSMISSION, sliding gear, with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive, floating type. FRONT AXLE, I beam drop forged one piece, nickel steel. WHEEL BASE, 114 inches. TIRES, 34x4½. EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, 2 acetylene head lights, with generator tail lamp and tube horn.

MODEL K,	4 cylinder, five passenger touring car. 35 H. P. Sliding gear transmission	Price, $2,500
MODEL B,	4 cylinder, five passenger car, 24-28 H. P. Sliding gear transmission	Price, $2,000
MODEL C,	Five passenger car. Double opposed motor, 20 H. P. Planetary transmission	Price, $1,250
MODEL H,	Two passenger runabout. Double opposed motor under hood. Direct drive. 14 H. P.	Price, $800

The Wayne Agent can supply a high grade car at any price his customer may demand.

We have the BEST—car for the customer.
proposition for the agent.

Write for Agency arrangements and descriptive matter if you can't wait till the Shows.

New York and Chicago Shows, of course; 69th Regiment Armory, New York.

WAYNE AUTOMOBILE CO.

DETROIT, MICH.

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HAYNES Exclusive Features that Appeal to Discriminating Buyers

MODEL "R" FOUR CYLINDER TOURING CAR.

Roller bearing vertical engines. Cylinders, 5⅛" x 6"; 50 H. P. Cast separately. Sliding gear transmission, with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carburetter which assures perfect mixture in all temperatures and under all climatic conditions. Master Clutch, that has no leather surfaces to wear. Takes hold easily and gradually, without jerking. Shaft drive. Exclusive universal joints, that do away with wear on pins, run in housing packed with grease. One piece nickel steel rear axle, with beveled sprocket gear, driven by roller pinion; thrust eliminated, friction reduced, noiseless; all in a bath of oil. Roller bearings throughout. 106-inch wheel base. 50-inch tonneau, with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight, 2,750 lbs. Price, $3,500, F. O. B. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906 HAYNES roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10% loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of pre-eminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears the transmission device never allows the momentum of the fast moving car to be thrown against the power of the engine, with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft-driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Grey curled hair and hand buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are some reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our new catalogue, sent prepaid upon request. For prompt attention address Desk 20.

"The Car that the Repairman Seldom Sees."

Chicago, 1421 Michigan Ave.,
New York, 1715 Broadway.

THE HAYNES AUTOMOBILE CO., Kokomo, Indiana
Members A. L. A. M.

The Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1450

8 H. P. Tourabout
$780

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative:
A. F. CHASE.

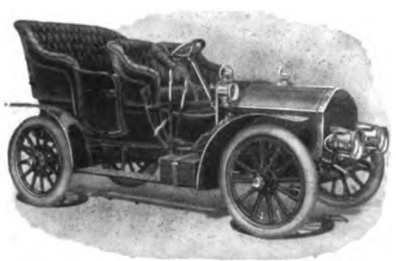
Members of American Motor Car Manufacturers' Association.
Agents in principal cities.

New York Agents:
MAXWELL-BRISCOE, INC.

Foreign Representatives (except Canada and Mexico), RICHARD IRVIN & CO., 25 Broad St., New York City.

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Waltham Orient



Waltham-Orient Model R, $2,250.
The Keystone of the Air-cooled Arch.

The Car of To-day Must do More than Look its Price. The high priced, high powered motor car is all right—it has its place and its purchasers but the popular demand is for a car of moderate price, reasonable speed that will be maintained up-hill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

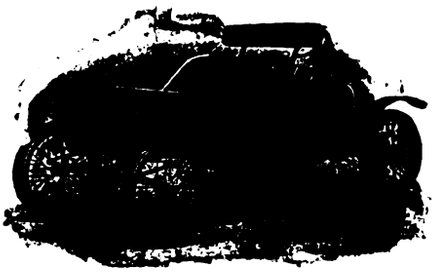
It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it and you have a right to expect it.

It is because it combines all of these important and necessary features that

The Waltham-Orient is the Leading American Car of its Price.

FIVE TOURING MODELS FOR 1906.

Model R, a Swell Special 20 H. P.....	$2,250
Model N, 20 H. P. Tourist.....	$2,000
Model L, 16 H. P. Tourist.....	$1,750
Model M, 16 H. P. Runabout, Detachable Tonneau	$1,750
Model K, 16 H. P. Two Passenger Runabout	$1,600



Friction Drive Buckboard Model BB, $400.
The Lowest Priced Motor Car Made in the World.

A Greyhound can run a mile as rapidly as a five thousand dollar Racehorse, and he can course through the sand and up the cliffs where the thoroughbred cannot follow; which only goes to prove that price, bulk, weight and power rating do not necessarily mean the first to finish nor the one to get nearest the top of the mountain.

The Buckboard is the Greyhound of Motor Cars.

It makes no pretensions to being the thoroughbred horse, it has no five thousand dollar price tag on it, but is simply in a class of its own, equally a pleasure to its owner for it serves its purpose and serves it well.

WHY?

BECAUSE: It creates interest quicker than any car you can represent. It conflicts with no other sales. It makes Motorists out of Horsemen and Cyclists. It sells to owners of the "thoroughbreds" for daily service to the station, the country club or the seashore, It sells for Rural Mail Routes, Telephone and Telegraph Linesmen, Parcel Delivery, etc. It requires less time and trouble for each sale, and less subsequent expense and repairs. It has an operating cost less than one-third of any other motor car in the world. It will run 35 miles to the gallon of gasoline, and 100 miles to the pint of oil. It has a maximum power ratio of 40 to 1. No other car exceeds 18 to 1. It will climb 40 per cent. official grade and run 30 miles or more per hour. If you will write us we will send you forty other reasons.

We are alive for live agents. Write for specifications and agency proposition.
We will exhibit only at the New York, Chicago and Boston Shows.

Distributing Depots

New York—The Waltham Mfg. Co., 1615 Broadway. Chicago—The Waltham Motor Car Co., 433 Wabash Ave. Boston—Waltham-Orient Motor Car Co., Auto Arcad
Los Angeles—Diamond Motor Car Co., 2604 S. Main St. Philadelphia—Martin & Hart Motor Co, 215 N. Broad St. Baltimore—Auto Supply & Storage Co, 1416 Madison Ave.
Providence—The Shepard Company. Cincinnati—Queen City Auto Co., 538 West McMicken Ave.

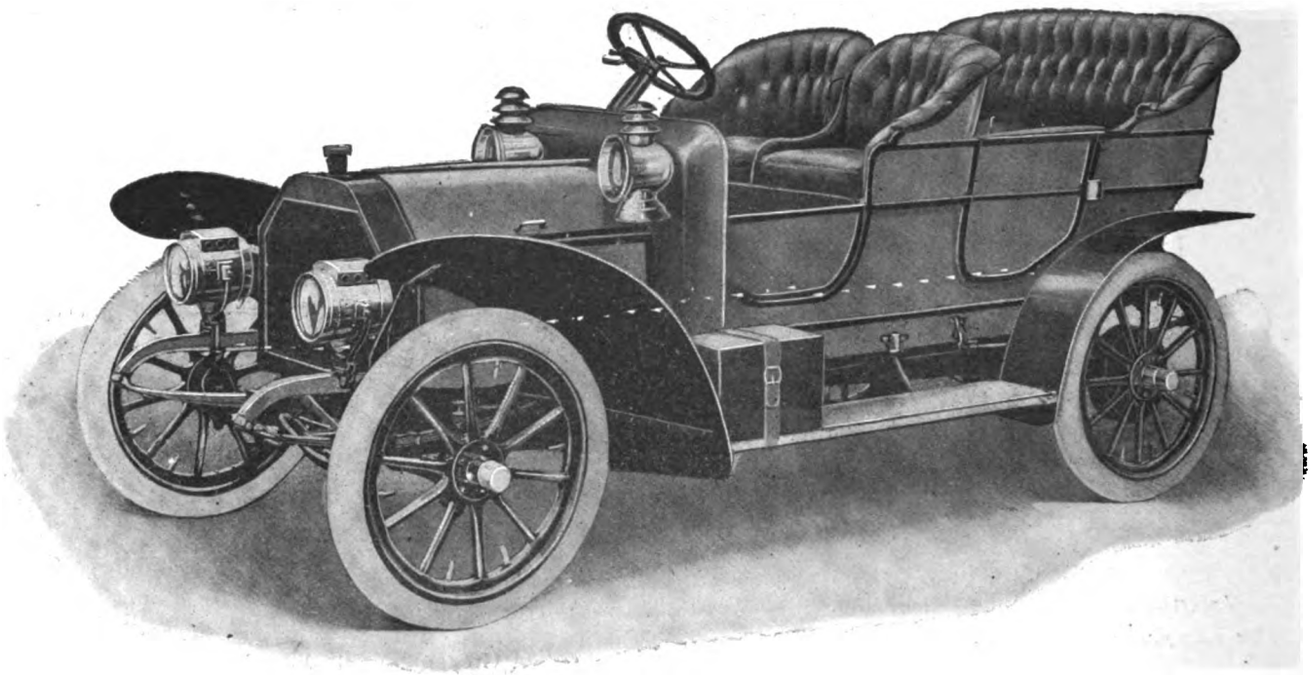
Waltham Manufacturing Company,

GENERAL OFFICES AND FACTORY,
WALTHAM, MASS, U. S. A.

Members Association of Licensed Automobile Manufacturers.

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OLDSMOBILE



We certainly have no monopoly in good motor cars this year. The best American cars are all good, and we only put in a bid for our car at $2250 (Model S, 4 cylinder) because it has an individuality worth knowing before you buy anything else. Have your trial run in it and then you can purchase or not, but you will have learned something about compactness, power and style that may stand you in good stead. If you want a lower priced car The Two Cycle (Model L) at $1250 is apt to be "it." We don't have to more than refer to The Two Cycle because every one knows about it. If you want to read up a little, make use of the coupons below.

WE WILL EXHIBIT AT MADISON SQUARE GARDEN.

OLDS MOTOR WORKS, - - - - Lansing, Mich., U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K5 Model L.... Traffic Cars....

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K5

Name _____

Address _____

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This AUTO TIRE is both DURABLE and LIVELY

When you buy an *ordinary* Auto Tire, you have to decide a difficult question.

Is it best to get a hard, inflexible tire, which will rack your bones and soon put your car out of business, but which will *last a season or more*

Or—

To get a soft, resilient, easy riding tire, which will go to pieces in a short time because it won't stand the wear and tear of the road?

Momentous question.

And either way you answer it—you lose.

Because if you decide on the *hard* tire, it means breakdowns on the road, and consequent liberal use of a farmer's team. It means constant repairs to your engine, a car always in the shop. Your aching joints are thrown in for good measure.

And if you select the *soft* tire, it means punctures, tire explosions and tire troubles generally. And you have to buy new tires every little while.

It's Money—Money—Money, either way.

You'll envy Rockefeller before you get through.

Now you can *dodge* this momentous question if you will.

Because the Goodyear Detachable Auto Tire has all the GOOD points of both the *hard* and the *soft* tire with the bad features of neither.



It's easy for anyone to understand WHY this is true. Read carefully, and see for yourself.

First, look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it. It's what the *hard* tire is made from.

Now right underneath this is the remainder of the outer tube (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be. It's the same as the seldom-used *soft* tire.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The dense rubber and the soft rubber together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

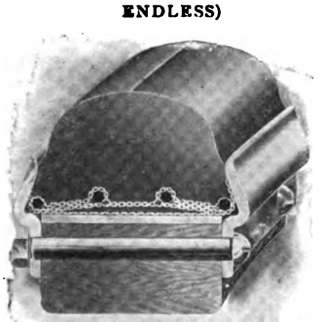
Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove St., Akron, Ohio

Branches in the following cities: Boston, 6 Merrimac St.; New York, Cor. 64th St. and Broadway; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 598 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

BAILEY TREAD furnished on Goodyear Tires (all sizes) when ordered

TURNER SOLID TIRE
ENDLESS)



THE CORRECT TIRE
FOR
Delivery Wagons,
Heavy Trucks,
Broughams,
Hansoms, Surreys,
Victorias,
Hotel 'Busses,
Hose Wagons,
Ladder Trucks,
Chemical Engines,
Water Towers,
Fire Engines.

TIRE ECONOMY

COST OF MAINTENANCE is main factor for consideration in selecting tire equipment.

MAKE CAREFUL COMPARISONS.
Don't be prejudiced by poor results obtained from cheap tires.

STOP EXPERIMENTING and end dissatisfaction by adopting a tire that has demonstrated its worth by years of use under all conditions, and to thousands of satisfied users

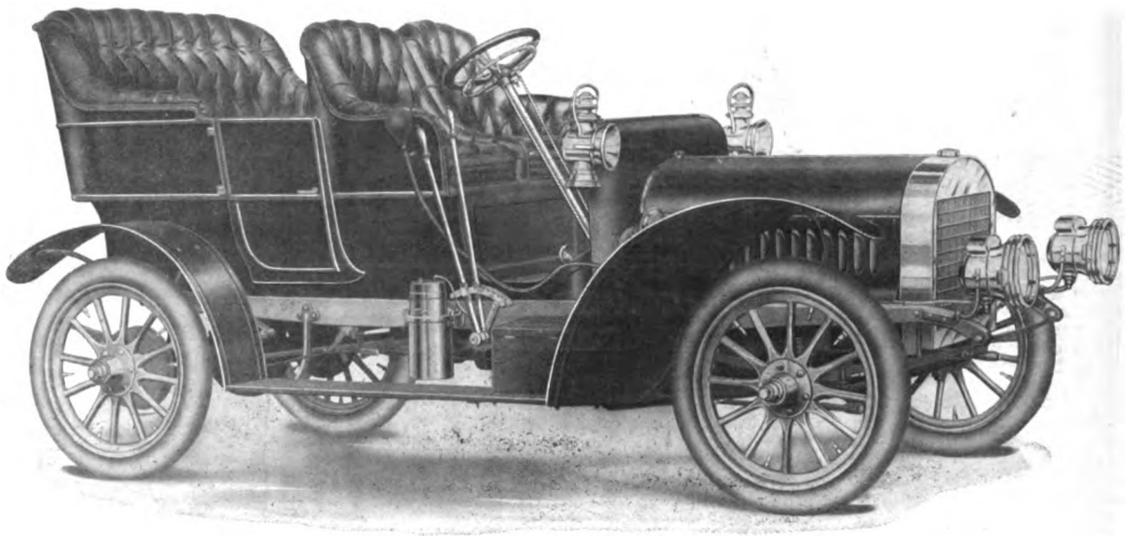
PROVEN LOW COST OF MAINTENANCE.

THE HARTFORD RUBBER WORKS CO.
HARTFORD, CONN.

Branch Houses:—NEW YORK, BOSTON, PHILADELPHIA, BUFFALO, CLEVELAND, DETROIT, CHICAGO, DENVER, SAN FRANCISCO, LOS ANGELES.

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Rambler



Model Fourteen

Looks good, doesn't it? It *is* good inside and out, with every modern feature refined to the Rambler standard, than which there is no higher. The motor is four cylinder, vertical, 20-25 horse power, giving a full horse power to each 90 pounds dead weight of the car with full equipment.

A sliding gear transmission that is simple, positive in action and noiseless. Three forward speeds and reverse.

Shaft drive, the entire shaft and universal joint enclosed, the latter in an oil bath.

Wheel base 100 inches, wheels 32 inches with 3 1-2 inch tires.

Finish and trimming in keeping with the whole, that is, the best obtainable.

Price with lamps, horn, and full equipment of tools, $1,750.

Thos. B. Jeffery & Co.

Main Office and Factory - - - - Kenosha, Wis., U. S. A.

Branches:

Boston, 145 Columbus Ave.
Philadelphia, 242 N. Broad Street.
San Francisco, 10th and Market Streets.
Chicago, 302-304 Wabash Ave.
Milwaukee, 457-459 Broadway.
New York Agency, 134 W. 38th St.

REPRESENTATIVES IN ALL LEADING CITIES.

ASK FOR COPY OF DECEMBER RAMBLER MAGAZINE.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, December 21, 1905. No. 13

POPE FILES HIS REPORT

Reorganization Nearly Completed, he Sees Larger Profits Ahead—Figures for the Year.

The annual report of the Pope Manufacturing Company was made public last week. It covers the twelve months ending with July last and is as follows:

	1905.	1904.
Gross earnings	$7,801,145	$7,226,589
Expenses and costs	6,496,395	5,995,793
Net earnings	1,304,749	1,230,796
Other income	*753	62,158
Total income	1,303,995	1,292,954
General exp. and interest	1,216,775	1,241,961
Balance net earnings	87,219	50,992

*Loss

ASSETS.

Cost of properties	$18,553,986
Deferred charges to operations	346,855
Stocks and materials	2,663,998
Accounts receivable	692,928
Bills receivable	82,687
Miscellaneous investments	286,283
Cash	262,519
Total	$22,894,260

LIABILITIES.

Preferred stock	$2,429,676
Second preferred stock	9,183,000
Common stock	10,000,000
Bankers' loans	825,000
Accounts payable	306,206
Payrolls accrued	51,518
Reserve for renewals	75,000
Surplus	23,859
Total	$22,894,260

In his report to the stockholders President Albert A. Pope says:

"In the reorganization of the business of the company industries in several factories were found to be not only unprofitable, but of a description that it seemed impossible to continue at a profit. The liquidation of such industries seemed to be inevitable, and thus far has been accomplished with the least possible loss. Other departments of the company have shown large profits, which have been nearly absorbed by the losses and expenses of liquidation and the cost of maintenance of unoperated factories, the latter item amounting for the year to $90,264. These unavoidable burdens on the earnings of the company are, I believe, largely a matter of the past.

"The manufacture of automobiles, which is now the larger part of the business of the company, is a comparatively new industry, and it has taken much time and money to experiment and produce goods of a standard quality.

"The amount of business done by the company during the first months of the new fiscal year considerably exceeds that of the corresponding period of the year just ended, and now that reorganization is nearly completed and losses from liquidation will be limited, the results of the company's operations should be more satisfactory."

May be Licensed Purchasing Department.

The Association of Licensed Automobile Manufacturers is contemplating the establishment of a purchasing department. How deeply the subject has been gone into or whether and definite steps have been taken is not known.

The first and only intimation that anything of the sort is in view is contained in a casual line in a circular letter issued to the members of the association, which summarizes the several departments that have been established and adds "prospectively a purchasing department." On the face of things, this mere reference appears to be fraught with possibly far reaching importance, and is suggestive of co-operative buying.

Miller Enters Buffalo and Detroit.

Charles E. Miller has "invaded" Buffalo and Detroit, which brings the number of his branch houses to six. The Buffalo store has been established at No. 824 Main street, and will be the largest of the Miller branches; in fact, it will be Miller's Western distributing depot, and permit the delivery the Western orders the day of or after their receipt. The Detroit store will be located on Jefferson street. The execution of the lease, however, is still pending.

Firestone Increases to $500,000.

The Firestone Tire & Rubber Co., Akron, Ohio, has increased its capital stock from $200,000 to $500,000. Much of the new money is to be used in the exploitation of the new Firestone mechanically fastened pneumatic tire, which is now practically ready for marketing and which is to be pushed with uncommon aggressiveness.

Ranier to Open in Chicago.

Having firmly established the Rainier car in the East, the Rainier company is now reaching Westward. It is making ready to establish a branch in Chicago.

GETS BACK AT GOODYEAR

Relieves Pressure for Debt by Claiming $150,000 Damages—Three Sides of the Case.

Joy unrestrained pervades the ranks of the Unamalgamated Order of New York Automobile Promoters and Press Agents.

It was caused late last week, when Charles Blake Cisco, assignee of a claim of the New York- Broadway Rubber Tire Co., filed an action against the Goodyear Tire and Rubber Co. in the Supreme Court of Kings County, N. Y., for $150,000 damages, in which breach of contract and "restraint of trade" was alleged. The Unamalgamated Order which has a keen and devouring appetite, and which has found tire manufacturers generally to be "poor pickings" of late, executed a cakewalk on the receipt of the news, and then drew forth their trusty hammers, battleaxes and coloring pots and proceeded to "get busy." The chief promoter in the Order is reported to be still delirious with delight. He tried to force the tire makers to supply about $1,000 worth of their goods to assist one of his private money making schemes, and when they refused to be coerced he acquired a sandbag, and ever since has been industriously fanning the atmosphere with it.

The delight of the Order was increased by the added news that the stock in the Goodyear branch had been attached to secure the claim. The attachment was, of course, promptly released when the Goodyear attorneys had their inning, and the branch is doing business as usual.

According to the best information obtainable, the New York-Broadway Rubber Tire Co. owes the Goodyear Co. some $15,000, for which notes are in existence. The first note was considerably overdue, and the Goodyear people were pressing for payment. Previously there had been some friction over the alleged failure of the New York-Broadway Co. to maintain prices, and to their method of selling tires outside the territory allotted them, Greater New York. When the Goodyear pressure for payment became uncomfortable and was accompanied by refusal to continue delivery of goods, presto! the New York-Broadway Rubber Tire Co.

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saw itself damaged all of $150,000 worth, and promptly assigned its claim to Charles Blake Cisco. Cisco is one of the concern's salesmen or employees in Brooklyn to whom it is said the idea of being mixed up with so much money or the thoughts of it has caused no little perturbation.

Meanwhile, there is promise of interesting developments on the Goodyear side of the controversy.

Brock Becomes Day's Lieutenant.

If M. I. Brock's resignation as sales manager of the Autocar Co. proved a surprise, his New York connection, which the Motor World remarked last week, will cause even more eye opening. He is to become assistant manager of the Association of Licensed Automobile Manufacturers, "to relieve the general manager from much of the detail and routine business of the office in order that he may have the necessary time to devote to the more important matters of litigation, patents and the direction of the general policy of the association." Mr. Brock, who is a lawyer by profession, is, because of the fact, unusually well fitted to be the right hand man of General Manager Day, in itself no mean compliment. He will assume his new duties on January 20.

Selden Suit Against Gallaher.

E. B. Gallaher—usually mistakenly called Gallagher—has been made a defendant in suit for infringement of the Selden license. Gallaher has been selling the Richard-Brazier car in New York without the formality of obtaining a license. Several years ago he did have such license, but it was revoked because of his alleged failure to pay his "dues." In addition to Gallaher, the Selden attorneys have filed another batch of infringement suits against some twenty prominent persons who are using unlicensed imported cars.

Buckeye's Big New Buildings.

The new buildings of the Buckeye Mfg. Co., at Anderson, Ind., makers of the Lambert car, have been completed, and last week the factory began running two shifts, eleven hours each. The new buildings are built of steel and concrete. The repository and paint shop measures 600x50 feet, the assembly room 140x50 feet, the pattern room 90x32 feet, the boiler room 30x90 feet and the engine repository 50x100 feet.

Court Says Stockholders Must Pay.

Judge Sears, of Omaha, Neb., has handed down a decision in the suit brought by Edward S. Stout, receiver of the defunct Omaha Gas Engine & Motor Co., in which he holds that the stockholders must pay their subscriptions to meet the indebtedness of the concern. The amounts the stockholders must pay range from $250 to $46,250, totalling $73,942.

Maxwell in Solid Mahogany.

The Maxwell-Briscoe Motor Co. is making ready a limousine car, the body of which will be of solid mahogany, with French plate glass trimmings. It will list at $2,000.

In the Retail World.

In addition to the Packard line, A. Jackson Brady has taken the Peerless agency for Detroit, Mich.

E. L. Mathewson, of Denver, Col., has taken the agency for the Oldsmobile and Thomas lines in that city.

The Imperial Automobile Co. has opened salesrooms at No. 1,024 Boylston street, Boston, Mass. The Dolson car will be handled.

In addition to the White and Rambler lines, the H. T. Hearsey Vehicle Co., Indianapolis, Ind., has added the Pope-Waverly electric.

Work was commenced last week on the garage of Edwards & Peck, Rye, N. Y. When completed this will be the only garage in the town.

Sigmund Frucht, Plainfield, N. J., has purchased the Long property, on Park avenue, where he will erect a garage. It will be of one story, 80x27 feet.

The three Grant Brothers, well known in Detroit, have combined and taken the local agency for Buick cars. Previously each was in business for himself.

Harry R. Drake & Sons, Newark, N. Y., are erecting a fireproof garage, 40x80 feet. It is being built of cement blocks. The firm will handle the Reo car exclusively.

The West Coast Motor Car Company, Los Angeles, Cal., has changed its title to the Middleton Motor Car Company. The Autocar will continue to be its leader.

Schenck Brothers, Great Neck, N. Y., who maintain one of the largest carriage repositories on Long Island, have "taken on" automobiles. They will handle the Ford.

H. Bernard Hallam, who this season handled the Cadillac and Winton lines in Seattle, Wash., has removed to Sioux City, Iowa, where he will have Reo territory for that city and vicinity.

Pending the lease of larger quarters Joseph T. Montfort has temporarily located at No. 1,309 Sycamore street, Cincinnati, Ohio. He will represent the Reo in Southern Ohio and Northern Kentucky.

J. P. Schneider, of Detroit, has taken the local agency of the Oldsmobile and Pierce lines. The deal for the former was closed by Roy D. Chapin, sales manager of the Olds Motor Works, last week.

The recently incorporated Colonial Automobile Co., St. Louis, Mo., has established itself at No. 3,944 Olive street, where Reos will be handled. Charles E. Lane is president of the company and S. J. Keiffer manager.

H. D. Aldrich, who operates as the Flushing Automobile Agency, Flushing, N. Y., has taken possession of his new brick garage at 107 Broadway. For 1906 he will handle a slice of Ford territory on Long Island.

The Metropolitan Automobile Co., which will handle Autocars in New York, has located at No. 2,182 to 2,186 Broadway. S. F. Randolph and his colleagues are the interested persons; in fact, the Metropolitan Automobile Co. is but a change of name, Autocar Co. of New York being deemed too suggestive of a branch house. Mr. Randolph will be the active manager.

A. M. Fuller, who was connected with the Los Angeles, Cal., branch of the White Sewing Machine Co., has been made manager of the recently formed Success Automobile Co. The Success company will handle the Winton on the Pacific Coast.

The Hamilton Automobile Co., of Chicago, has opened temporary salesrooms at No. 1,337 Michigan avenue, in the building occupied by J. W. Hayden, agent for the Prest-O-Lite gas tanks, and H. P. Branstetter, agent for the Queen cars.

On the occasion of his last visit George F. Kehew, sales manager of the C. H. Blomstrom Motor Co., of Detroit, Mich., finally enthroned the Queen car in New York City, and quite fittingly with the Majestic Automobile Co., at Broadway and Fifty-fourth street.

The Eastern Automobile Co., 326 North Broad street, Philadelphia, have let contracts for the erection of an addition to their salesroom and garage, which when completed will triple their "elbow room." The concern is handling the Peerless and the Stevens-Duryea cars, and is ready to take on one more line

A. J. Smith and C. S. Anthony, Los Angeles, Cal., agents for the Elmore car, have contracted for the erection of a new salesroom and garage at the northwest corner of Tenth and Main streets, that city, to be completed February 1. Until then the agency will be at the Mills & Price garage. No. 830 South Main street.

On Saturday last, 16th inst., Judge Amend, of the Supreme Court, appointed Rudolph A. Seligman receiver for the Pioneer Automobile Campus Motor Co., which formerly did business at No. 54 West Forty-third street, New York City. The application was made by the National Battery Co., a judgment creditor for $366. The company was incorporated in July, 1903.

William Newman, formerly manager of William E. Metzger's retail store, has secured the agency of the Welch motor car and the product of the Soules Mfg. Co., of Grand Rapids, for Detroit, and will shortly "open up" at the corner of Alexander and Woodward avenues. The new establishment, in which a garage will be included, will be 225x150 feet, and it is expected that it will be one of the most pretentious of the local colony.

Edward Inman and J. B. Connally have purchased the interests of J. H. Nunally, Ernest Woodruff, D. Woodward and William Kiser in the Atlanta (Ga.) Automobile Co., and this company has consolidated with the White Motor Car Co., taking the name of the former. The company will handle the White, Cadillac and Franklin cars, and do a general storage and repair business at Nos. 89, 91 and 93 North Pryor street. Edward Inman will be president of the reorganized company, and J. B. Connally vice-president and manager.

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CHICAGO MAKES ALLOTMENTS

How its Show Space has been Apportioned—Long List of Exhibitors.

The allotment of space for the Chicago show was completed last week. The distribution and full list of exhibitors are as follows:

Coliseum—Main Floor.

Apperson Bros. Automobile Co., 96 and 97; Autocar Co., 5 and 6; Baker Motor Vehicle Co., 85 and 86; Bartholomew Co., 91 and 92; Cadillac Automobile Co., 100 and 101; Corbin Motor Vehicle Co., 83 and 84; Duryea Power Co., 13; Electric Vehicle Co., 14 to 19, inclusive; Elmore Mfg. Co., 60 and 61; H. H. Franklin Mfg. Co., 102 to 104 inclusive; Ford Motor Co., 111 to 113, inclusive; Haynes Automobile Co., 7 and 8; Holsman Automobile Co., 95; Thomas B. Jeffery & Co., 42 to 47, inclusive; Knox Automobile Co., 55 to 59, inclusive; Locomobile Co. of America, 48 to 51, inclusive; Mitchell Motor Co., 80 to 82, inclusive; National Motor Vehicle Co., 76 to 79, inclusive; Northern Mfg. Co., 69 and 70.

Olds Motor Works, 62 to 67, inclusive; Packard Motor Car Company, 34 to 37, inclusive; Peerless Motor Car Co., 9 to 12, inclusive; George N. Pierce Co., 105, 106 106½ and 107; Pope Mfg. Co., 20 to 26, inclusive; Premier Motor Mfg. Co., 93; Reliance Motor Car Co., 94; Royal Motor Car Co., 98 and 99; F. B. Stearns Co., 40 and 54; J. Stevens Arms and Tool Co., 27, 28, 29 and 41; St. Louis Motor Carriage Co., 68; Studebaker Automobile Co., 38, 39, 52 and 53; E. R. Thomas Motor Co., 30 to 33, inclusive; Waltham Mfg. Co., 89 and 90; Wayne Automobile Co., 87 and 88; White Sewing Machine Co., ½-107, 108, 109 and 110; Woods Motor Vehicle Co., 71 to 75, inclusive; Winton Motor Carriage Co., 1 and 4, inclusive.

Armory—Main Floor.

Adams Co., A50; Acme Motor Car Co., A41; Automobile Importing Co., A14; American Locomotive Automobile Co., A3 and A4; American Motor Truck Co., A2; Buffalo Electric Carriage Co., A30; Buckeye Mfg. Co., A17 and A18; C. H. Blomstrom Motor Co., A8 and A9; Berkshire Automobile Co., A5; Cleveland Motor Car Co., A24, A25 and A26; John L. Dolson & Sons, A40; Daimler Mfg. Co., A31; Dayton Motor Car Co., A27 and A38; English Daimler Co., A24; Knight & Kilbourne, A10; Kansas City Motor Car Co., A6 and A7.

Logan Construction Co., A48; Lozier, Motor Co., A36; Oscar Lear Automobile Co., A45; H. Sargent Michaels Co., A19; Moon Motor Car Co., A49; Marion Motor Car Co., A47; Maxwel-Briscoe Motor Co., A34 and A35; Moline Automobile Co., A33; McCrea Motor Truck Co., A39; Palais de l'Automobile, A32; Panhard & Levassor, A16; Reo Motor Car Co., A42 to A44, inclusive; Rapid Motor Vehicle Co., A37; Rainier Co., A20 to A23, inclusive. Synnestvedt Machine Co., A46; Smith & Mabley, Inc., A11 to A13, inclusive; Soules Motor Car Co., A1; Ralph Temple, A15; Western Tool Works, A28.

Armory—Gallery.

The Automobile, A81; American Lamp Co., A61; Automobile Accessories Mfg. Co., A59 and A60; Eugene Arnstein, A56; Cycle and Automobile Trade Journal, A74; Culver Novelty Co., A86; Chicago Caloric Engine Co., A66; Gearless Transmission Co., A83 and A84; Hancock Mfg. Co., A76; Hutchinson Electric Horn Co., A72; Horseless Age, A68; Hicks Speed Indicator Co., A53; Kinsey Mfg. Co., A71; Look Electric Co., A66; Milwaukee Rubber Works Co., A82; Michelin Tire American Agency, A51; J. B. McKeague, A52; Motor Age, A55; P. Reilly & Son, A80; Speed Changing Pulley Co., A62; Tritt Electric Co., A69; Ventilated Cushion Co., A85; Way Muffler Co., A54.

Coliseum—2d Floor Annex.

Automobile Supply Co., 264; Aerocar Co., 247 and 248; Beckley-Ralston Co., 222 to 224, inclusive; Cook Rly. Track Appliance Co., 280; Continental Caoutchouc Co., 274 to 278, inclusive; Columbus Buggy Co., 241 to 243, inclusive; Chicago Pneumatic Tool Co., 235 to 238, inclusive; Cullman Wheel Co., 257; Dac Automobile Supply House, 288 to 289, inclusive; Dayton Folding Tonneau Co., 285; Dorris Motor Car Co., 233, 234, 239 and 240; Joseph Dixon Crucible Co., 217; Duff Mfg. Co., 268; Excelsior Supply Co., 272 to 273, inclusive; Galois Tire Co., 287; Hendee Mfg. Co., 283; Imperial Brass Mfg. Co., 279.

Knoblock-Heideman Mfg. Co., 221; London Automobile Supply Co., 263; Limousine and Carriage Mfg. Co., 219 and 220; Manhattan Storage Co., 269 and 270; Madison-Kipp Mfg. Co., 266; Motor Car Equipment Co., 260; Motorcar Company, 250; North Chicago Machine Co., 281; Nordyke & Marmon Co., 227 and 228; Railway Appliances Co., 271; Sherwin-Williams Co., 286; Samson Leather Tire Co., 261 and 262; Standard Carriage Lamp Co., 225; Universal Storage Battery Co., 218; Volta Battery Co., 282; Vesta Accumulator Co., 259; Windsor Automobile Co., 251 and 252; Whiteley Steel Co., 226.

Annex—First Floor.

Auburn Automobile Co., 122; Austin Automobile Co., 119 and 120; Buick Motor Co., 114 and 115; Chicago Automobile Mfg. Co., 116; Jackson Automobile Co., 123 and 124; Pierce Engine Co., 125; Pungs-Finch Automobile and Gas Engine Co., 121; Tincher Motor Car Co., 117; Vehicle Equipment Co., 128 to 130, inclusive; Welch Motor Vehicle Co., 126.

Coliseum—Gallery.

American Electric Novelty and Mfg. Co., 136; Atwood Mfg. Co., 201; Aurora Automatic Machine Co., 138; Autocoil Co., 139; Badger Brass Mfg. Co., 162 and 163; Baldwin Chain and Mfg. Co., 187; Belden Automobile Transmission Co., 216; Brown-Lipe Gear Co., 186; Brennan Mfg. Co., 157; Wm. H. Brown, 176; S. F. Bowser & Co., 141; Briscoe Mfg. Co., 134; Byrne, Kingston & Co., 198 and 199; Consolidated Mfg. Co., 194; Detroit Motor Car Supply Co., 211 and 212; Detroit Steel Products Co., 208, Diamond Rubber Co., 142 and 143; Diamond Chain & Mfg. Co., 182; R. E. Dietz Co., 154; Dayton Electrical Mfg. Co., 150; Edmunds & Jones Mfg. Co., 193; Firestone Tire and Rubber Co., 132; Fisk Rubber Co., 161.

Gabriel Horn Mfg. Co., 204; B. F. Goodrich Co., 169 and 189; Goodyear Tire and Rubber Co., ½-166 and 167; Gray & Davis, 165 and ½-166; G. & J. Tire Co., 164; Hartford Suspension Co., 195; A. W. Harris Oil Co., 179; Hardy Co., 178; Hartford Rubber Works Co., 158 and 159; Hyatt Roller Bearing Co., 151; Hine-Watt Mfg. Co., 146; International A. & V. Tire Co., 155; Jones Speedometer, 153; Long Mfg. Co., 184; McGlehan Mfg. Co., 207; McCord & Co., 156; Morgan & Wright, 148 and 149; Motsinger Device Mfg. Co., 144; N. Y. and N. J. Lubricants Co., 180; National Carbon Co., 133; Oliver Mfg. Co., 192; Pennsylvania Rubber Co., 202; Pantasote Co., 209; Prest-O-Lite Co., 177; Rose Mfg. Co., 168; Republican Rubber Co., 210; Remy Elec. Co., 171; Spicer Universal Joint Mfg. Co., 185; Swinehart Clincher Tire and Rubber Co., 183; Standard Oil Co., 175; Standard Roller Bearing Co., 173; Schwartz Wheel Co., 172; C. F. Splitdorf, 152; Shelby Steel Tube Co., 147; Sprague Umbrella Co., 140; Steel Ball Co., 135; Timken Roller Bearing and Axle Co., 188; Tokeim Mfg. Co., 170; Valentine & Co., 206; Veeder Mfg. Co., 160; Week Chain Tire Grip Co., 200; Wheeler Mfg. Co., 196 and 197; Webb Co., 191; Warner Gear Co., 181; Warner Instrument Co., 174; Whitney Mfg. Co., 145; Wray Pump and Register Co., 137.

Packard Gets Import Decision.

In a decision by I. F. Fischer, of the Board of United States General Appraisers, filed on Monday last, he sustains a claim made by the Packard Motor Car Company of Detroit. It was held that the Collector of Customs erred in levying duty at the rate of 45 per cent. ad valorem on automobile forgings. Instead the board finds that the merchandise was properly dutiable according to the rate per pound, or at 35 per cent., varying with the character of the merchandise. The Collector is ordered to make a liquidation of the entries.

Will Wind Up Without Receiver.

There likely will be no receiver to wind up the tangled affairs of the Simplicities Auto Co., of Middletown, Conn., after all. Its affairs will be wound up, however, but by the board of directors—that is, if certain interested persons consent to this plan. At a meeting of the counsel and creditors in Hartford last Friday afternoon an agreement was practically reached to withdraw the application for the appointment of a receiver. Judge Henney represented E. D. Seymour, of New Hartford, the largest stockholder, owning 310 shares, and the conference adjourned to enable Judge Henney to communicate with his client and see if he would agree to have the company wound up by the directors. M. C. Hillery, of Hartford, another large stockholder, is said to be agreeable to such a course.

Hussey's Creditors to Take Charge.

The Hussey Drop Forge & Mfg. Co., Cleveland, Ohio, is in financial straits. It was known that it had been sailing close to the wind for some time, but last week things grew so threatening that the creditors felt impelled to act. At a meeting called for the purpose, it was found that the Hussey liabilities were just about double the assets, and decisive action followed. It was recommended that the Hussey officials be called on to resign, and that the creditors take over and operate the business until spring, at least. By so doing, it is believed that they will be able to realize 50 or 75 per cent. of their claims.

Maxwell-Briscoe Choose Chicago.

Chicago finally has been selected by the Maxwell-Briscoe Motor Co. as the site of their Western plant, a suitable building, with 60,000 square feet of space, having been secured at Grand Crossing and 73d street. The Maxwell-Briscoe idea is to ship the parts of their cars from their Eastern factories and have them assembled in Chicago for the Western trade. The immediate result will be a great saving in railroad charges and prompt deliveries of all Western orders.

To Make Ford Motors.

There has been formed in Detroit the Ford Mfg. Co., capitalized at $100,000, which will make engines and parts for the Ford cars, hitherto made by the Dodge Brothers. John F. Dodge is interested in the new concern, having been made its vice-president. Other officers are Henry Ford, president; C. H. Wills, secretary, and James Couzans, treasurer. The Ford Motor Co. will continue to assemble and market the cars.

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THE SINGLE CYLINDER CADILLAC
Will climb any hill that any automobile will climb.

THE SINGLE CYLINDER CADILLAC
Will travel any road that any automobile will travel.

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Will travel as fast as anybody ought to ride.

THE SINGLE CYLINDER CADILLAC
Costs less to operate. Costs less to Maintain.
Requires less attention than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined, and won for them the unquestioned distinction of

AMERICA'S LEADING MOTOR CARS.

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Members Association of Licensed Automobile Manufacturers.

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THE

NEW YORK

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of

THE MOTOR WORLD

Will Bear Dates

January 11th and 18th.

As always, they will deal with the subject intelligently and well and be thoroughly representative of the industry.

"Starting" from the Seat."

"Self-starting from the seat" has been more or less of a qualified recommendation, but one that the majority of manufacturers of higher priced cars found it necessary to include in their specifications even though it cost considerable in the way of extra accessories such as a battery and coil system beside the magneto, in order to be able to do so. It has in the past, except in the case of the runabout with crank handle in convenient reach not meant anything more or less than that the motor could be started by switching on the current in case there happened to be a compressed charge in one of the cylinders. But this did not always happen even under the most favorable circumstances and seldom, if ever, after the engine had been stopped for a length of time.

At least two manufacturers have attempted to secure a method of starting from the seat at all times and both of them have accordingly done away with the familiar crank under the radiator. One, an American maker, has substituted an arrangement, the details of which are not at present known, to be somewhat after the fashion of the usual pedal on the footboard, which through a geared lever or similar contrivance turns the motor shaft. The other, which hails from England, is merely a shift in the location of the crank from the front end of the bonnet to the dashboard, the motion being transmitted by means of sprocket and chains on the engine side of the board to the shaft. While both devices may prove conveniences in their way, it is much to be feared that when considerable turning is necessary there will be a longing on the part of the individual who has to do it for a crank in the open—in a position where there is room "to swing a cat."

Development of the Throttle.

Elasticity of control ever has been the goal of the internal combustion engine designer, who has accordingly looked to the steam engine as a guide. The development of the throttle in its present day state of efficiency has been the outcome of investigation along this line, and it is generally conceded that as represented by the best types extant, it is a method that marks a close approach to the long sought for end.

Whether in the course of time it will continue to improve and eventually constitute that degree of perfection beyond which it is not profitable to go, remains to be seen. In the meantime foreign designers, apparently considering that this limit has already been reached, have instead of attempting to replace it with something else, supplemented it with an accessory in the shape of provision for varying the lift of the inlet valve. While not exactly the same principle this aptly may be compared to the variable cut off slide valve of the locomotive, the skilful manipulation of which has so much to do with the speed as well as the economy of running. As matter of fact, some of the devices for accomplishing the variable lift of the inlet valves in the gasolene motor are patterned directly after steam engineering practice.

So strong is this tendency on the other side that where comparatively few cars have been so equipped in the past year, 1906 will see quite a number, the recent London show bringing forward several varying types. It may well be considered as sound engineering practice to govern an engine by the most elastic means possible, and for this end it has been found that the use of the throttle in conjunction with a variable lift of the induction valve is superior to either alone and permits of a far greater degree of elasticity than any method in which impulses are cut out to keep the speed down.

It appears somewhat strange in view of the amount of attention that has been devoted to this feature of the engine abroad during the past year that it should apparently have been allowed to pass unnoticed by American designers, although in view of what the coming shows may bring to light, this statement may not be entirely accurate. Still, a large number of makers has already uncovered 1906 models, and in none of them, so far as appears at present, is this feature embodied.

The Open Closed Car.

It is with no small degree of satisfaction that the liberal minded motorist observes that the drift of popular design in the building of the more elaborate types of body for general and touring uses is inclining more and more to the acceptance of ideas which make for all around utility under every possible condition, even though still following the general set lines of construction, which have shaped the four-wheeled vehicle ever since the days of the post chaise of yore. Thus, while the average limousine of the day readily falls under the general classification of the coupe type of carriage body, its modernness is revealed in points which go to increase the comfort and enjoyment of the occupants in all weathers, and this apart from those points of technical improvement

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which affect the more vital portions of the mechanism alone.

The most noticeable effect of this tendency is to be seen in the arrangements for the light and ventilation of these bodies which are being adapted to the more elegant cars at this time—a tendency to make them appear less like elaborate delivery wagons and more like sumptuous carriages.

This is observable to a certain extent in the types of landaulette bodies, which, as now built, have large window area, and are readily manipulated to secure the effect of the victoria, or open barouche either with or without the wind shield in front. But it is even more noticeable in the true limousine types, to which the area of sash and framework material is reduced to the minimum and the glazing made entirely adjustable either by hinge or drop arrangements—in other words, more windows and much larger windows are the rule. The occupants are not being "cooped up," and need no longer peer through mere portholes. It is being made easy for them to see and be seen and to have a close or an open car at will.

A couple of years ago, little relationship between the types of canopy and limousine was to be observed. They were intended for totally different purposes, and each was sufficient in itself for the particular use for which it was intended. The great cost of the high grade automobile has, however, necessitated the development of a kind of body which combines with the advantages of both these types an adaptability which neither of them possessed. Hence, they have been merged into the present form of closed body, which may be made to yield the free ventilation of the one, or the complete protection and warmth of the other.

The body designed by the California gentleman, which was duplicated for King Edward, and which was re-illustrated in last week's Motor World, embraces much of the ideal. The windows are large and drop into side pockets, and there are divided adjustable shutters raised to any desired position to shield from sunlight or draught. These shutters are well worth general adoption, because, as their designer made plain, while they add much to comfort, with the greatly increased area of glass, they also serve a protecting purpose when at speed or in case of accident.

The demand for the ultra fine bodies is limited; it is exclusive; yet it is quite imperative in its requirement of all that is best in the way of comfortable and convenient arrangements. It calls for something which shall answer to the same class of use to which the parlor car is put in railway work, and only that design fitted to fulfill the demand which is comparable with the parlor car in point of complete utility. Pure decorative elegance, the fitting up of an interior with a host of folderols and fancies in the way of writing desks and lavatories, cannot serve to much account, for they are not germain to the chief uses of the motor car. What is needed is light, and plenty of it; air, and plenty of it, and protection from dust, wind and rain.

Where Danger Lamps are Needed.

Whether or not a universal lamp law is possible or impossible of passage, there is one measure which should be brought to the attention of our lawmakers before a lengthening list of serious accidents forces home the need of emphatic legislation in the matter. This is in regard to the haulage of overhanging loads by trucks, which are in no way guarded by signals either day or night.

It is no uncommon sight to observe a truck laden with stage scenery, steel beams or telegraph poles slowly moving along with anywhere from six to ten feet of swaying material projecting behind, menacing other traffic. No measure of protection is given the public from these loads, by day, nor is any sort of warning of their existence given at night. A driver following such an affair in total or semi-darkness is not likely to notice the extension of the load even though he sees the team itself.

A case in point which aptly illustrates the nature of this peril occurred only this week. A well known motorist and party were driving along a comparatively isolated thoroughfare. In the obscurity of growing darkness they discerned a team ahead, and with no thought of possible danger ran up to within a few feet of it before slowing down. Just as they slowed down they became suddenly aware of a pile of timber ends which projected from the rear of the wagon. The fore part of the machine had slipped under the logs, and had not the driver of the automobile been checked in time a serious accident would have resulted.

We realize full well that such loads are necessary in the field of daily commerce, and cannot be eliminated, but there should be some measure of protection afforded the other part of the travelling public. A law compelling such vehicles to prominently display rear danger signals on their projecting loads at night seems the only solution of the problem.

The Week's Incorporations.

Augusta, Me.—Pontiac Motor Car Co., under Maine laws, with $25,000 capital. Corporators—I. L. Fairbanks and L. A. Burleigh.

Evansville, Ind.—Windsor Automobile Co., under South Dakota laws, with $250,000 capital. Corporators—William M. Copeland et al.

Middletown, Conn.—The Middletown Automobile Body Co., under Connecticut laws, with $50,000 capital. Corporators—C. E. Neal, F. W. Woychinske and Felix Janicki.

Los Angeles, Cal.—Rapp Wave Motor Co., under California laws, with $200,000 capital. Corporators—Theodore Rapp, Frederick Detmers, D. D. Dayton, Charles D. McKelvey, N. D. Bowsee.

Portland, Me.—Park Square Motor Mart Garage, under Maine laws, with $100,000 capital; to deal in automobiles. Officers and corporators—President, G. A. Hutchins; treasurer, C. H. Tolman.

Dayton, Ohio.—Borderwisch & Glancy Automobile Co., under Ohio laws, with $25,000 capital. Corporators—Edward Borderwisch, E. M. Glancy, O. C. Waveries, L. Y. Cooper and William G. Powell.

New York City, N. Y.—Zim-Rock Motor Car Co., under New York laws, with $15,000 capital; to deal in automobiles. Corporators—Charles E. Zimmerman, Oliver C. Carpenter and Hartwell P. Heath.

Buffalo, N. Y.—Cleveland Cycle & Auto Co., under New York laws, with $2,500 capital; to make motors, engines, automobiles, etc. Corporators—James MacNaughton, F. Louis Du Broy and M. D. Ashford.

Brooklyn, N. Y.—Macbeth Bros.' Co., under New York laws, with $10,000 capital; to make automobiles, wagons, etc. Corporators—John Robison, Magnus Eriksen, Elisha T. Halse and George MacBeth.

Indianapolis, Ind.—The American Motor Car Co., under Indiana laws, with $25,000 capital; to make all kinds of motor vehicles. Corporators—William A. Moore, William E. Barton and Clifton R. Cameron.

New York City, N. Y.—Hamburg Tire Co., under New York laws, with $20,000 capital; to make tires for motor cars, carriages, etc. Corporators—Neil A. Weathers, Millard C. Hunstone and Rose A. Mackey.

Detroit, Mich.—The Motor Car Co., under Michigan laws, with $150,000 capital; to make automobiles. Corporators—Frank C. Caughey, Fred Postal, Randall A. Palmer, George A. Young and Harry C. Radford.

Here's a Non-Freezing Water.

Big Rapids, Mich., is a town that should justly spring into fame in connection with winter automobiling, for it boasts of a spring of mineral water that is capable of supplying non-freezing mixture ad lib. It is said to be proof against atmospheric changes to the extent of remaining liquid until a temperature of 45 degrees below zero is reached. While the water is saline, it is said not to leave any sediment.

George F. Kehew, sales manager of the C. H. Blomstrom Motor Co., Detroit, Mich., is making a hurried Pacific Coast trip. It will probably result in an extension of the Queen's dominion.

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GENERAL VIEW OF THE PARIS SHOW, NOW IN PROGRESS.

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FOUR A'S FIRST AUCTION

When Price Was Not Right, Cars Were Withdrawn—"Pikers" Make $2 Bids.

Due to the method of giving it publicity employed more than anything else, the first sale of the Auto Auction Association of America, held last week at 220 West 41st street, in this city, did not score as heavy a success as was to have been anticipated under more favorable circumstances, particularly when the quality and condition of the cars offered is taken into consideration. The mistake was made of advertising the sale principally in those papers which make a specialty of catering to the professional buyers at auction. Consequently, instead of attracting individuals anxious to pick up good cars, there was, as might have been expected, a congregation of small dealers of the "two dollar bid" class, as they were dubbed by one of the members. They were reinforced by some of the professionals of the second-hand game, who were there to see what manner of picking there would be at this organized auction. They were not enthusiastic bidders, and did not do much to liven the game up after the opening figures had been passed. They were doubtless responsible for starting some of the numbers at $2 in an attempt to harrass the auctioneer and show the backers of the "square deal" method of auctioning off cars that are neither wrecks nor relics that they are to be figured with.

Add to this the fact that the twenty-nine cars comprising the entrants appeared but an hour or two previous to the time set for holding the auction, which allowed but scant opportunity for inspection, and it is not so much to be wondered at that there was a lack of interest displayed when some of the exhibits were put under the hammer. But one of a total of thirty cars scheduled to be sold, a 35 horsepower American Mercedes of 1904, failed to appear. The remaining twenty-nine constituted an array of good cars such as has never been brought together in this city and probably not in this country for a similar purpose.

As an opener $500 was bid on a Decauville 16 horsepower, 1905 model, which was gradually raised to $2,000, at which point the exhortations of the auctioneer failed to tempt further and the hammer dropped on it at that figure.

The next on the list was a four cylinder, 22 horsepower Locomobile of 1904, and it rapidly mounted from its start of $400 to $1,700, at which figure it also changed hands. Following this came a two-cylinder, 16 horsepower car of the same year and make, which, after some hesitation, was finally launched forth at $200. It did not arouse the same amount of interest that its predecessors and mounted slowly to $900 by comparatively small bids. It went at that figure and with it departed apparently considerable of the prospect for a rapid cleaning out of the lot that the ready disposal of the first three augured.

A Winton special that had been built specially for racing was No. 4 in the catalogue, but it proved a dark horse that could find few backers. It was reluctantly started at $50 and was withdrawn when after vain attempts to do better on the part of the auctioneer it stopped dead at $400. Although more interest was manifested in No. 5, which was a Columbia electric Stanhope, it fell flat at $900 and met the same fate. No. 6, a Peerless, four-cylinder, 40 horsepower runabout model of the current year proved a reviver, however, starting at $1,000 and bringing $2,500. After this a Peerless 24 horsepower motor separate, was raised to $250 and changed hands. A White steamer of 1903 was next in order, but found few takers. It was started at $100 and was finally knocked down at $600. This was the only steam car sold, Nos. 9 and 11, which were also White models of 1904 and 1903, arousing but a modicum of interest. Nor did a Mors of 1903 fare much better.

If Nos. 12 and 14, which were, respectively, a Columbia electric runabout and a Victoria, did not arouse sufficient interest, an electric hansom cab, which brought out an opening offer of $2, rather startled the auctioneer. The lack of demand for electrics was evident from the fact that of the five models entered none were disposed of. Unlucky 13 was a Peerless 24 horsepower model of 1904, which refuted its hoodoo by starting in the neighborhood of $800 and brought $2,400. In the case of a Pope-Toledo 24 horsepower, 1904 model, a Pierce-Arrow 32 and a Mercedes 28 of 1905, which were Nos. 15, 16 and 18 on the list, bidders were only responsive to the extent of $1,200, $2,200 and $3,000, respectively, at which figures the cars were withdrawn, a proceeding entirely justifiable, particularly in the case of the latter two, considering their list prices of $5,000 and $10,000, as well as the fact that they had seen but a single season's use. On the remaining cars the bids ranged from $200 for a 1904 Oldsmobile runabout up to almost $1,000 on various models of different makes, such as the Ford, Cadillac, Pope-Toledo and Locomobile, but one of which antedated 1904, but there was no spirit whatever to the bidding and most of them were withdrawn and no further attempt made to dispose of them.

France's Output of Chasses.

"Where do the French chasses go?" asks a writer in one of the Gallic automobile journals. France has twenty large factories which produce on the average two vehicles a day, which means 1,200 a month or 14,400 in the course of a year. To this total must be added the output of fifty smaller factories, which produce on the average of one car every other day, an estimate that is conceded to be very conservative. This would make the capacity of the latter 750 per month or 9,000 annually. He therefore arrives at the conclusion that it is not exaggerating in the slightest to credit the French industry with a yearly total of at least 25,000 chasses.

That the major portion does not remain in France has all along been quite clear. None of the makers in France carries any stock, for the vehicles are sold as fast as they are produced. The question then arises, where do they go? In 1904 the number of cars in actual use was augmented by 5,000, according to the official registration, and he accordingly concludes that something like 8,000 may be considered as having been disposed of at home, which leaves 17,000 to be accounted for. Even though the number actually disposed of in France were taken as double the official figures, this would still leave 15,000. England has proved the best customer, taking close to 50 per cent, or between 7,000 and 8,000. The United States likewise proves a good customer, with something like 3,000 to its credit, but neither the Americans nor Belgium, Germany, Spain, Italy and the colonies, which account for the remainder of the output are as eager takers of the French cars as the Briton.

Stylish Thief Bagged in Newark.

The man who is out to steal an automobile has a larger job on his hands than he bargains for. At least such would appear to be the experience of a dapper young man adorned with a tile and wearing an expensive looking fur lined coat, who turned up in Newark, N. J., from nowhere in particular, just the "South," with that avowed purpose. He immediately proceeded to take a few assistants into his confidence, and the latter in turn made confidants of some Central Office men.

The detectives shadowed him for three days, during which time he frequently took up a stand in close proximity to high priced cars standing at the curb, but somehow or other the chauffeur sat on his seat as if glued to it. Finally he decided, if he was to have an automobile, he would have to get it in some other manner, and accordingly proceeded to take it from the garage of the Motor Vehicle Co. late one night, but the detectives interrupted the proceedings. When the magistrate asked Diamond or Smith, as the stranger variously styled himself, if he intended to beat his board bill, he proudly replied that he was no "doormat thief."

"Miss" as an Aid to Second Hand Sales.

One of the many odd things that comes out of the Manhattan Storage Co. is a circular letter relating to second hand cars, which invariably bears a rather masculine signature in ink. The signature is, however, always prefixed by "Miss," inclosed in parentheses. What influence this touch of supposed femininity is expected to exert is, like many other matters, past finding out.

Just Why Winton Went Abroad.

It transpires that Alexander Winton did not go abroad wholly to rusticate or to visit the Paris show. He spent most of his time in Scotland, and as a result there is now a Mrs. Alexander Winton, who will accompany him back to America.

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THOMAS REPLIES TO SCHWAB

His Answer is Specific and Deals With the Alleged Superiority of Foreign Cars.

In a recent public interview Charles M. Schwab, former president of the United States Steel Corporation, was quoted as saying:

"Yet it is notorious that American automobiles have not ranked as high as European automobiles. The truth is that we have hitherto made no genuine effort to produce forged steel working parts of automobiles of the highest quality. That is one of the reasons why our automobiles have not ranked as high as those of foreign make."

When he read this oft repeated calumny the red blood in E. R. Thomas, the Buffalo manufacturer, fired up, and he proceeded to show Mr. Schwab that he had overdrawn the case.

"As this seems to be a general opinion, naturally fostered and encouraged by foreign competitors, it seems time that the American, proud of home industry, should be informed of the actual facts, which, upon investigation, will convince the most skeptical that quality of material has been the smallest influence," says Mr. Thomas.

"It is true that in the transmission parts and in the axles and in possibly one or two of the minor details the foreign manufacturers have had in the past a slight advantage. It has enabled them to use smaller shafts and gears for the transmission, but that does not matter. American roads demand heavier mechanism, and we have used the larger shafts and gears at an expense of some eight or ten pounds, which has been more than saved elsewhere.

"There are several reasons why American automobiles have not in the past ranked as high as those of foreign makes, quality of steel being the smallest.

"The leading reason is due to the fact that the American manufacturer spent many years in experimenting before reaching his final conclusions. In the earlier stages of the industry he used electricity as his motive power; then for one or two years steam was the popular power. After that he switched off to horizontal gas engines.

"In the mean time the foreign manufacturer had adopted the style of vertical motors in front, now practically the universal design, and this gave to them the advantage of a start of several years on the American manufacturer. The chief advantage of the vertical design is its minimum of weight and its ready accessibility for examination and repairs, in those days a most important advantage.

"Another great reason why the foreign cars were considered superior is that the makers of them first saw the necessity of and introduced high power. This was not so much for the purpose of gaining excessive speeds as it was for the negotiating of hills and bad roads without overtaxing the engine and other mechanism. Higher power was not only contributory to the pleasure of the owner, but also eliminated to a large extent the expenses of repairs and delays on the road.

"During this transition period the American maker was using barely enough power to send his car over ordinary roads, and if the valves were foul or any slight derangements occurred his car could not climb hills or overcome bad roads. Under the same conditions the foreign cars would continue to operate at fair speed. This has all been remedied now. The American manufacturers are using greater power, and are more than holding their own under all conditions of travel to which their cars are subjected.

"Still another reason for the belief that the foreign cars are superior to those of American make is the high prices asked for them. But these high prices are due entirely to the fact that a number of middlemen share the profits and not because of any greater intrinsic value or better workmanship.

"To sum it all up, the foreign cars have been sold to a certain class of Eastern buyers mainly because they alone catered to the demand for high power, roominess and comfort, and because they were a year ahead of us in perfecting their permanent designs. Design, speed, power and size have been the causes, not an imaginary lower grade of materials or workmanship.

"This is proved in our own case. Last year we made and sold four hundred high powered and roomy cars. As a consequence this year it has become necessary to erect a new factory with a capacity of one thousand 50 horsepower machines which will seat seven people and make a mile a minute.

"The time for the American manufacturer to supplant his foreign rival on his home grounds has come."

Germany Opinion of America.

"If America could show a set of roads equalling even only in some degree those of France and Germany, where would the Continental automobile industry be, and where, pray, France?" asks the Allgemeine Automobil Zeitung in a recently published extended resumé of automobile conditions in various countries. "Europe would to-day have been left far behind, for it is only experience in building fast cars de luxe that is lacking in America, and without good roads it is something that is slowly acquired. The Vanderbilt races of the last two years have helped considerably to develop heavy touring cars, and a huge step has been taken in this direction."

Dealers to Promote Hill Climb.

Los Angeles, Cal., is to have a hill climbing contest some time in January, the exact date to be set later. This was decided at the last meeting of the Southern California Automobile Dealers' Association when President W. K. Cowan appointed Fred Stamm, H. D. Ryno and Ralph Hamlin a committee to look after arrangements. The course will probably be from Pasadena to Altadena. There will be three classes—one for runabouts, another for cars costing less than $1,600 and a class for four cylinder cars.

LONDON'S MOTOR BUS SERVICE

Its Remarkable Success and Expansion—The Cars Used and the Tire Problem.

Since the end of March last, when the London motor omnibus began business with three vehicles, one company alone has carried 4,500,000 passengers without a single accident or a serious breakdown. There are now something like 200 licensed motor 'buses in London, and their average is said to be about 1,000 passengers per day—a statement of facts which conveys some idea of the manner in which the world metropolis has literally been invaded by the motor driven 'bus.

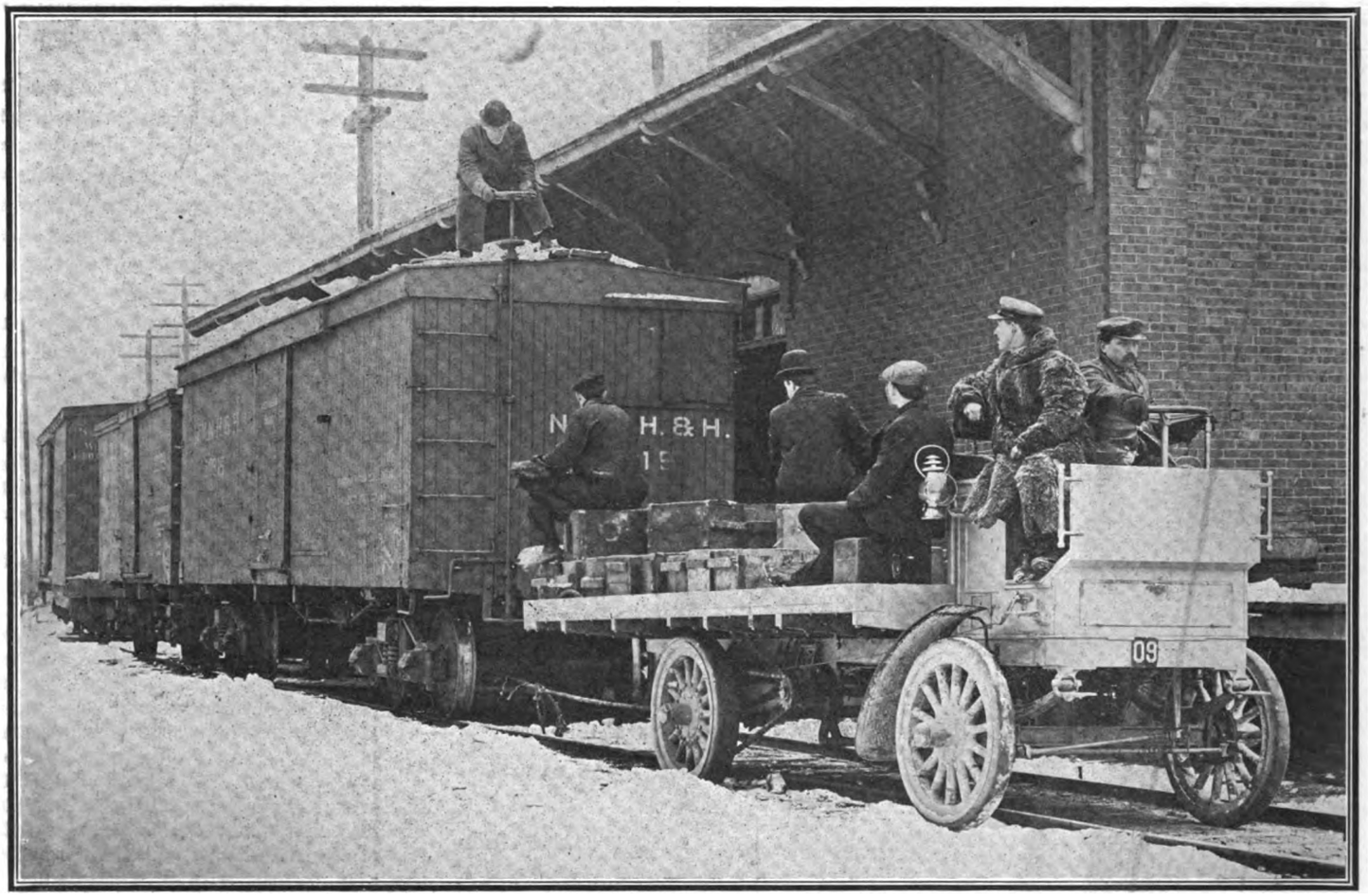
The vehicles are on the street eighteen hours a day, and the motormen have a considerable advantage over the drivers of the horse drawn 'buses, although the wages are about the same. The motormen receive $11.62 per week and the conductors $10.18, but those on the horse drawn vehicles have to work fourteen to sixteen hours a day. The "Vanguard" motor 'buses run eighteen hours a day, but there are two shifts of men to work them. The horse drivers are found to be the best raw material for conversion into motormen, because they have confidence, nerve and caution and can dodge other vehicles where a less experienced hand would pull up. The beginner is instructed at the yard, and then has to take a course in driving a practice 'bus under the guiding eye of an instructor until he has mastered the rudiments and acquired confidence.

London roads are not exactly tracks of velvet, and tires are said to constitute the great problem. Motor omnibus companies and tire manufacturers are still in the experimental stage where they are concerned. The traffic keeps a London 'bus always on the tilt, dodging here, there and everywhere, as well as everything and everybody. A 'bus weighs four tons, and all this means a heavy side strain on the tires. Filled with passengers, it weighs six tons. Is it any wonder that the tire problem as applied to the motor 'bus is to be spelled out in the alphabet of sorrow? The companies are always trying tires; half a dozen have been tried out already, some of them proving absolutely worthless.

The first cost of a set is from $450 to $500 bought outright, the makers giving a guarantee that the tires will "live" for 10,000 miles; if they do not, then an allowance or rebate is made for the shortage at the inquest. Another way in which motor 'bus tires are bought is on a mileage basis—so much per mile while the tire "lives." But whichever method is adopted, the cost figures out pretty much the same. The daily travel of a motor 'bus is 128 miles with thirty-four passengers, while the horse drawn vehicle travels only twenty-seven miles a day with twenty-six passengers, these figures being for full capacity in both instances.

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Motor Truck in the Role of Locomotive.



Pulling a load of 73,450 pounds is as easily accomplished by a 16 horsepower motor as rolling off a log is done by a turtle, think the officials of the Knox Automobile Co., Springfield, Mass., after the feat performed by one of the Knox trucks in that city one day last week.

As shown in the accompanying photograph, the truck, which has just been completed for a large Chicago drygoods firm, was coupled to two freight cars on the New England Railroad's tracks on Wilbraham avenue, Springfield. One car was weighted to 41,250 pounds, and the other, empty, weighed 21,200 pounds. The truck itself was loaded, and weighed altogether 11,000 pounds, making a total of 73,450 pounds.

The truck was placed a-straddle the ties, and as the snow gave little foothold sand was sprinkled on the surface, but otherwise no attachments were used on the wheels. When the signal was given the truck started up the freight cars without any difficulty, and although the tracks are slightly upgrade at this point, easily hauled the great load. It is said that after the test it was discovered that the brakes on one of the freight cars were partially set.

It was a test that strikingly shows the capabilities of the gas engine.

Charged the Bus With Loitering.

A most amusing instance of the manner in which the English "bobby" interprets the law of his land occurred the other day when one of the fraternity haled into court the conductor of a motor 'bus plying through one of London's most crowded sections, on a technical charge of loitering. The offence, it developed was caused by a breakdown in the mechanism of the machine, which caused a rather lengthy delay. The magistrate was somewhat nonplussed at the circumstance, and asked the constable whether in case one of a pair of horses should fall and break a leg, he would arrest the coachman on a similar charge. He replied in the negative. The court scratched its head for a time, and then dismissed the case on payment of costs. Whether the company subsequently dismissed the poor conductor for having got himself into trouble is not known.

Moore Heads the New Yorks.

W. J. P. Moore was elected president of the New York Motor Club at its annual meeting last Thursday night, 14th inst., to succeed Charles H. Hyde. The other officers-elect are as follows: Vice-presidents, H. M. Swetland and R. H. Johnston; secretary, A. B. Tucker; treasurer, Frank J. Griffin; directors, M. L. Downs, Robert W. Haff, R. G. Howell and W. J. Morgan. The treasurer's report showed the club to be in a prosperous condition.

After three readings and three reductions, the City Council of Urbana, Ohio, has passed an automobile speed ordinance. An eight miles an hour limit is the restriction within the city.

To Improve Asbury's Thirst Service.

Asbury Park's time-honored "arks," which have done faithful duty toting booze around to the houses of thirsty individuals ever since the Rev. Dr. Ballard and the Ocean Grove Camp Meeting Association took a dominating part in the politics of her sister city, are soon to be no more. According to reports from the seashore resort, the horse-drawn "arks" are to be replaced by a more modern "wet goods" delivery service. Asbury Park is supposed to be a dry town, so the plan is to get a license for a roadhouse just outside the mile limit and have the hotel orders telephoned there and then rush the "goods" to the city in automobiles. Thus a man with a predetermined thirst need wait but a short time for a full evening's supply of liquid refreshments. What the W. C. T. U. thinks of the innovation has not developed.

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CANNOT SCORCH BY PROXY

Massachusetts Court Upsets That Idiotic Contention—Police Must Identify Offenders.

One part at least of Massachusetts' despotic automobile law has finally been carried above the courts where a fine is levied regardless of all other considerations, and has been given a setback. Edward W. Taylor, of Concord, and Charles V. Smith, of Lincoln, Mass., were summoned to appear before a local court in Concord last summer and were accused of overspeeding their cars on the streets of the last named town. Although the evidence conclusively showed that at the time of the alleged breach of law neither of the owners were in the cars and that the latter were driven by persons other than the defendants, they were duly mulcted in accordance with what has come to be time-honored precedent in the Bay State.

They forthwith appealed from the decision and the merits of the case were argued before Judge Gaskill, of the Middlesex Superior Criminal Court, who has just made public his findings. They are to the effect that an owner of an automobile who is registered and has a license is not criminally liable for overspeeding when he is not in the machine at the time. He further ruled that, in order to convict an owner of overspeeding, the police must be able to identify him as having been in the machine, and that it is not sufficient for the prosecution to prove the ownership of the machine without connecting the owner with the alleged offence. The point of law which the lower courts have either been unable to recognize or have wilfully refused to take into consideration, is that one person cannot be convicted of a misdemeanor actually committed by another, even though he, the owner, may have been present as a passenger in the car.

It has been a common practice in Massachusetts to convict the owner of a car for overspeeding whether he was in the car at the time or not, and, what is worse, the great majority of convictions have been secured without the complaining official being compelled to recognize the defendant as the person who was driving the car when the offence is alleged to have been committed. The decision will undoubtedly give rise to a large number of appeals based on the same state of facts, as this form of procedure is known to have become an established practice in more than one local court.

Jersey Farmers to Advocate Big Fees.

Those people who till the soil in Mercer, Middlesex and Somerset counties, in New Jersey, and who proudly boast of membership in the Princeton Agricultural Association, have decided to go before the ensuing Legislature and "ask for the passage of a law to prohibit the driving of automobiles at a speed exceeding fifteen miles an hour in the country and ten miles an hour in the city; compelling non-residents to pay a license fee of from $25 to $100 per year, according to the size of their automobiles, and giving the right to any and all persons to arrest without a warrant any automobilist who violates the law, also the right to hale him before any peace officer, who shall detain him and his machine until justice is secured."

Prof. Huddy Delivers Some Opinions.

It has taken Professor Xenophon P. Huddy, of the Rhode Island bar, up to the present to discover that the legal status of the automobile "has not as yet been judicially defined," which is the manner he takes to express his opinion in the current issue of the Yale Law Journal.

For want of a precedent, the automobile is classified with all forms of wheeled users of the road, regardless of the form of their power. In an Indiana court decision its right to the highways has been "judicially declared to be equal to the rights of the other vehicles, "and a Massachusetts decision asserts that "one who is motoring on the streets and highways may be said to be 'driving.'"

It is the final conclusion of the learned professor, after discussing all the pros and cons of the matter, that "the hazard to which the safety of pedestrians, and in most cases persons with horses, may be exposed, results from the personal part played in motoring, rather than from the nature of the vehicle."

Bennett Cup Kicked Down Stairs.

According to cablegrams, at the meeting in Paris on Monday, 18th inst., of delegates to the International Automobile Conference, the French club was successful in its efforts to give the Bennett Cup a kick down to the first flight of stairs that leads to oblivion. That is to say, the conference decided that there shall be no race for the Bennett Cup next year. It was arranged to hold another conference in June, 1906, to decide whether a race for the trophy should be held in 1907 or whether it should be definitely abandoned. The consensus of opinion was, however, that the contest will be abandoned, the cup remaining with France. Some of the conferrees, the cable adds, censured the alleged bad organization of the Vanderbilt Cup race on Long Island, whatever that may mean.

Speedway Schemes Show Signs of Life.

Although the many mammoth speedway projects were supposed to have died the natural death befitting their kind, such seems not to be the case. The idea of building a five-mile triangular track in the pine forest, twelve miles below Lakewood, N. J., has been disinterred by a party of Atlantic City hotel proprietors, and one of the same kind is anxious that automobile manufacturers devote $35,000 to help a speedway near his resort in Indiana. The latest proposition is nearer home—on Long Island. Somebody has figured out that a circular speedway, thirty miles in circumference, can be constructed near Garden City for $4,000 a mile, or at a total cost of a trifling $120,000.

ADDING TO THE BURDEN

"Journalistic Enterprise" Evolves an Amazing Measure—Fees and Penalties Galore.

Outing, a monthly magazine supposed to be devoted to outdoor life, has seen a way to obtain some cheap advertising or notoriety at the expense of motor vehicles. It has had drafted a voluminous and rather crude measure, which it styles the "Outing Magazine Automobile Bill," and which it hopes to have introduced into the legislatures of various States. The thing is a loosely drawn hodge-podge of existing laws, including some of their most vicious provisions.

The Outing bill, of course, would require not only registration, licenses and numbered tags front and rear and also the State seal, but "examination by the State board of public roads." It is not content with the $1, $2 or $3 fees now exacted, but would increase the amount to $25 per vehicle. Manufacturers and dealers would be mulcted the same sum for a general license. For rental cars or motorcycles the fee would be $2 per year. Chauffeurs also would be taxed $2 each, and "no person shall employ for hire as chauffeur or operator of an automobile or motorcycle any person not specially licensed." Just imagine a man owning a motorcycle employing a chauffeur to operate it for him! When a machine is sold Outing would have the State seal returned to the Secretary of State, whom it would empower with authority to suspend or revoke licenses for any misconduct.

The other penalties are suspension of licenses for fifteen days for a first offence, thirty days' suspension for a second offence, and revocation and a fine of $100 or thirty days in jail for a third transgression. In addition, any motorist who "fails to stop and offer assistance to any person or property (it is not made clear what assistance can be offered to property) injured by him" shall have his license revoked.

About the only original thought in the entire proposed bill exempts motorists from suits for damages due to collisions with vehicles that display no lights. It does not, however, say that the motorist shall be entitled to damages, as should be the case.

To Keep an Eye on Motorphobes.

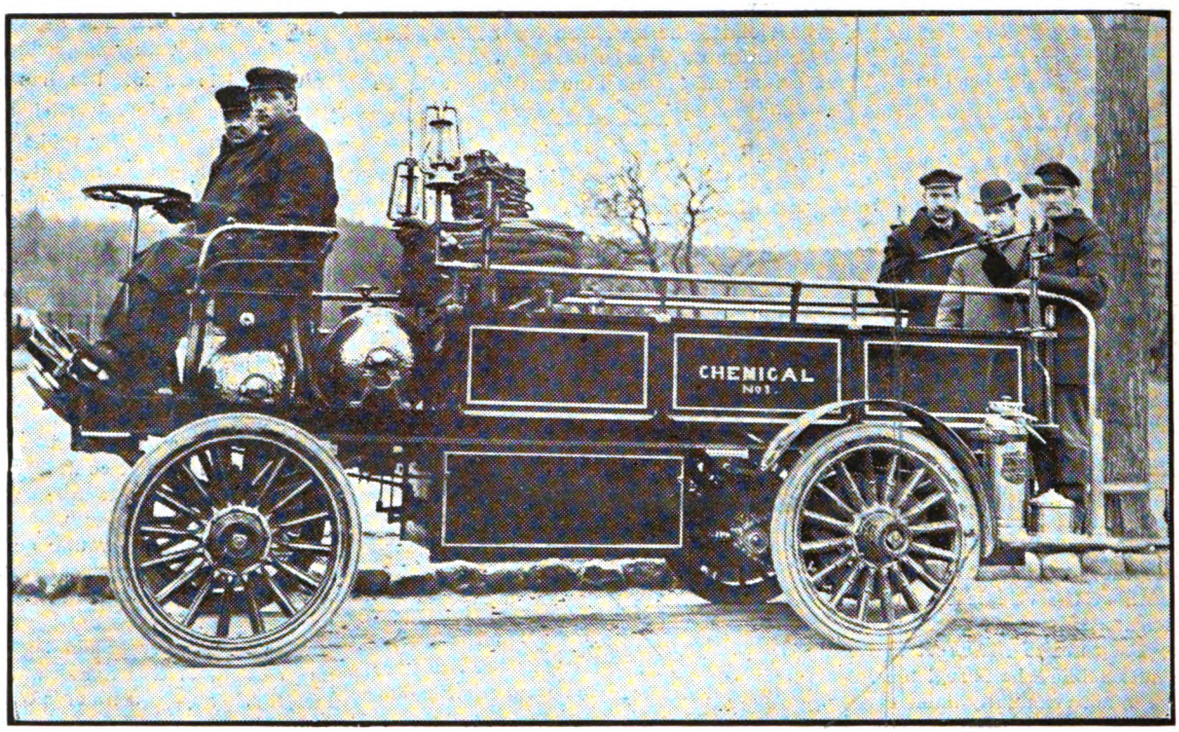
To have an eye on any automobile legislation that is likely to crop out in this session of the legislature the Associated Automobile Clubs of New Jersey has appointed a committee on legislation, with W. F. Sadler, Jr., of the Mercer County Automobile Club, Trenton, chairman. At the same meeting a State secretaryship was created. J. E. Gill, of the Mercer club, being named.

For a Clubhouse on the Beach.

The new Avalon (N. J.) Automobile Club contemplates the erection of a clubhouse on the beach. The house is to contain fifteen rooms, eight of which will be sleeping apartments for members.

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How Hopedale Fights the Fire Fiend.



Hopedale, Mass., is proud. It now has an electric fire fighting apparatus, and enjoys also the distinction of being among the first cities to adopt the approved method of subduing Vulcan's wrath. The novel combination chemical and hose electric wagon reproduced above was built by the Pope Motor Car Co., at Indianapolis, Ind., and is being employed to good advantage in Hopedale. In a thorough test, in which its speed and hill climbing capabilities were tried out under adverse weather conditions, the truck developed a speed of over 16 miles an hour, and climbed a 13 per cent grade loaded with 300 or 400 pounds above that called for in contract, with ease. Ten seconds was found sufficient time for the apparatus to start and be on the street after the first alarm.

The Pope-Waverly electric fire engine is equipped with 48 cells of exide battery, furnishing current for two motors capable of developing a total of fifteen horse power. The chemical equipment was made by the Howe Engine Co., of Indianapolis, and the fire extinguishing apparatus includes besides the chemical engine, ladders, some 1,000 pounds of auxiliary hose, besides the hose for the chemical engine, buckets and extinguishers and the usual equipment of axes, bars and tools.

The Excuses They Give When Caught.

From grave to gay, from funny to farcical, are the excuses sometimes given in court by motor drivers as to why they were "going a bit fast," says Motoring.

"I was driving to get a marriage license," in one instance touched the sentiment of the bench to the extent of halving the panalty.

Doctors who have proved that they were travelling in a hurry to emergency cases have sometimes escaped scot free, but the naive excuse of an old wound left as a legacy from the Boer was suddenly breaking out afresh, and rendering the driver's hands incapable of regulating his speed, has been known to fail in working on the feelings of some hard-hearted magistrates.

A guileless plea put forth by an excellent driver that the car suddenly ran away and he was not able to curtail its innate lust, resulted in a fine of $50 and costs, while a motorist caught in a trap and timed at 30 miles an hour was pardoned on the never-do-it-again principle when he shyly explained that he was seeking a doctor owing to an interesting domestic event.

Unfortunately for the ingenious genius, such excuses, although adding materially to the gayety of police courts, are usually regarded by the bench as being on a par with those apologists in the Scriptures who "had married a wife" or "bought an ox," and could not, therefore, be held responsible for a defection of duty.

The Tale of a Housemaid.

A specially clever housemaid, who had been seven years in a family which took to motoring, was one day laughingly told by her master that "if she proved as capable as a chauffeur as she was at housework, he would employ her in that capacity." She took him at his word, insisted on learning motor-mechanics, and at a salary of $150 a year combines the post of chauffeur with that of house-valet-maid. She can do most repairs, is a capital driver, and after overhauling her car at the close of a day's run, waits at the family dinner table with the same skill as distinguishes her at the steering wheel. The combination of chauffeur, valet and waiting maid is one which goes far towards solving the problem of "motoring on nothing a year." The story, which comes from London, is almost too good to be true.

How the Horse is Not Diminishing.

Some are constantly claiming the final displacement of the horse with the automobile, and others are calling attention to the fact that there are more horses than ever before. The fact is there is room for both the horse and the automobile, and twentieth century civilization demands both and is going to have both. It is easy enough to see that the automobile is increasing wonderfully, but so is the horse.

At the present time there are about 17,000,000 horses in the United States. Ten years ago there were something more than 1,000,000 less, and in 1890 the Government statistics show that there were only about 14,000,000 horses in the country. This does not look very much as if horses would be driven out by automobiles.

Wants Racing on the Ice.

Some brilliant Western genius has conceived the idea of racing automobiles on the frozen surface of Lake Harriet this winter for the delectation of fashionable Minneapolis and St. Paul folk. All fully insured martyrs are invited to step forward.

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FAIRBANKS; HIS DEER STORY

It Happened at Night in the Maine Woods and, of Course, the Deer's Dead.

According to a veracious press agent, Emmet Fairbanks, a prominent Boston sportsman, will have to answer to the game wardens for shooting a deer, which the latter claims was done in self-defence after the animal had charged upon the occupants of the motor car.

According to the story teller, Mr. Fairbanks and party were on their way from Mattawamkeag to Patten. They were making the trip in an automobile, and were travelling at night along the old stage road between these places, which in one place transects a ten mile stretch of forest. They were "bowling merrily along"—press agents invariably use this expression when possible—when the members of the party saw what appeared to be two green balls of fire which seemed to be suspended in the air about five feet above the road. Mr. Fairbanks immediately recognized the eyes of a deer, and running his machine up to within a short distance of the large buck, which seemed to be fascinated by the headlight of the machine, he turned the headlight on the animal, at the some time pressing the bulb of the born. Immediately the buck was transformed into a different creature, and, lowering his head, he made straight for the automobile.

His first attack was on the headlight, and after completely destroying this he cut one tire open with his hoof. Just what happened after this none of the party seem able to tell. The buck seemed to be on both sides of the machine at once. They could feel the shocks as he butted into the car, and once one of his antlers caught in Mrs. Fairbank's long fur robe and ripped clear through her dress to the skin. The animal ripped up a suit case as if it was made of paper. The party in the machine tried to escape by running the machine away, but it was run off the road and into a tree, and the enraged animal began anew his assaults on the car. The men succeeded in getting a rifle out of the baggage under the seat, and the animal was killed and hung up along the roadside.

This thrilling episode puts to shame any of Peter Fenimore Cooper's brilliant efforts.

Where Cars Must Have Red Lions.

Hyde Park's sacred precincts are henceforth to be open to London owners of certain types of automobiles. Electric vehicles are to be exempted from the operation of the ordinance excluding all kinds of motors from the park during certain hours of the day in summer.

The question at once arises, How are the London "bobbies," with their scant knowledge of things automobile, to distinguish the cars apart, particularly in view of the great similarity that now exists and that has led to the creation of the term "mock electrics" to describe the gasolene propelled coupes and other closed types that are sans bonnet as well as all other familiar indications of their kind, except the exhaust? But the authorities have taken this into account and special licenses will in future be granted for electromobiles.

Cars so licensed will be adorned with a large red lion and crown painted on them and an appropriate penalty has been laid down for all who counterfeit the device on cars for which it is not intended. One of the conditions of this special registration is that the owner of the car will be held jointly responsible with his driver for all offences against the law.

Moose Dinner, Automobile Style

Messrs. Risley and Hill, of the Electric Vehicle Co., Hartford, recently went gunning for moose. They bagged one of the "birds," and on their return to Hartford tendered the E. V. officials a "moose dinner," the "demonstration," as it was styled, being held on the 19th inst. The occasion set a new mark in menus, as witness the one that prevailed:

76° Raw Gasolene Straight or in Fire Balls

4 Trembles to the Man

Old Valvoline Brew—In Kegs

Little Neck Clams
Valve Push Rods on the Side

Moose and Venison
Smothered with Lock-washers and Albany Grease
Jelly Electrolyte or Low-tension Magneto Currants
(We don't know which you'll get; it's up to Maxim.)

Self-Starting Boston Baker Mufflers
"Old Style" Look out for the Back-Fire.

Cafe Noord "Spitfires"
Sea-going Cabs and Indecent Hotel Accommodations Furnished on Application Delivery in 90 days

Megargel Lost and Found.

Percy F. Megargel and David Fassett, the two tourists who are peregrinating about the continent on a Reo car, have been reported lost in the deep snow on the mountains west of Flagstaff, Ariz. According to the dispatch from Flagstaff, the men left the town of Williams at 10 p. m. Friday last, and have not since been heard from.

The trail has not been traversed for a month and is covered with deep snow, the telegram adds. Telegrams sent to all places along the Santa Fe have failed to locate the party. A relief expedition, with food, blankets and shovels, started out at noon on Monday in the midst of a blinding snowstorm. The next dispatch rescued them in the nick of time.

Club Gives Knoll a Library Lamp.

H. A. Meldrum has been elected president of the Automobile Club of Buffalo, N. Y., to succeed Augustus H. Knoll, who has retired on account of business. At the meeting, Monday night, this week, Mr. Knoll was presented with an electric library table lamp by the members. Other officers elected were: F. B. Hoover, vice-president; D. H. Lewis, secretary; Charles Clifton, treasurer; Edward H. Butler, E. R. Thomas and S. P. White, directors.

FRENCH VILLIAN, LATEST STYLE

How Jealous Lucien Obtained Revenge When the Proud Governess Spurned His Love.

The newest form of motor melodrama hails from Paris. A chauffeur named Lucien Broomed, part Irish and French, engaged in a garage in the Avenue Niel, fell desperately in love with a French nursery governess named Claudine Villon.

The lady accepted many motor drives from Lucien. But she rejected him as a permanent accessory of her heart and life. Dejeuners and trips by car into the country she did not despise. But she chose another partner for the non-stop run through life.

When the date of her marriage was finally fixed Lucien begged her to take a last and parting trip on his car. To this she consented. While whizzing through the Avenue de la Grande Armee, the love sick chauffeur once again implored the lady of his heart to jilt her accepted lover.

This she stanchly refused to do. In the Boulevard Lanne the miscreant motorist suddenly put in the top speed, opened wide the throttle and leaped from the car.

The lady and the motor ran amuck. The girl tried her best to stop the car, but was ignorant of the means. The motor car crashed against the curb; the young woman was hurled violently out, broke her leg and sustained other serious injuries.

The lover, Lucien, was arrested, and at the trial will probably be made by a sentimental public the hero of the first motor melodrama of its kind. Doubtless he will be the recipient of bouquets and lucrative offers of marriage. For the Paris public dearly loves a villain of the penny novelette order, whether guilty of vitriol throwing or of launching a girl on so destructive a journey as that of an uncontrolled high speed car in traffic.

License for a Twelve-Year-Old.

New Hampshire now comes forward with a bid for fame in the shape of the youngest licensed chauffeur in the country. He is Willie Carpenter, twelve years young, son of C. H. Carpenter, and a resident of Franklin, N. H. It is said that the Secretary of State had grave doubts as to the propriety of issuing a license to a twelve-year-old, but the manner in which the incumbent has tooled his father's Oldsmobile touring runabout during the last season has removed any fears on this score. He is credited with good judgment in driving and is said to be very careful.

Why Tilt Scorched and Was Forgiven.

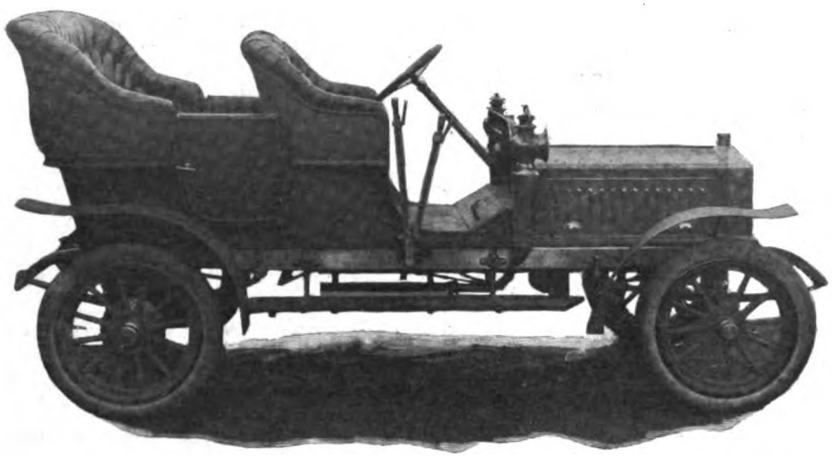
A man is apt to forget the automobile speed laws when the stork pays a visit to his home. So reasoned C. A. Tilt when he was asked to explain to Judge Chatt, in a Chicago police court, why he happened to be driving his car faster than the prescribed limit. The judge also was of the opinion that the advent of a new son was sufficient cause to make a man forget himself for the nonce, so Tilt was allowed to go home and welcome the arrival.

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MITCHELL'S $1 800 MODEL

Despite its Relatively Popular Price it Incorporates Many High-Priced Features.

At last it would seem that the day of the good car selling at a moderate price has arrived. Of course, this is not the millennium, when a man may buy his heart's desire for a couple of hundred dollars, but it is the day when the purchaser of an American machine



of moderate price may rest assured that he is securing a dollar's worth for every dollar he lays down, and when for an amount of outlay which a year ago would hardly have bought a respectable two cylinder light touring machine, he may possess himself of a solidly built four cylinder car, complete and efficient in every detail and worthy of his use.

There are in the market at the present time several machines which come under this general classification, but none, it is safe to say, which approaches any nearer to the ideal than the head of the Mitchell line. This machine, which is catalogued by the Mitchell Motor Car Co. as Model D-4, occupies the somewhat equivocal position of the de luxe edition of a low priced four cylinder car. Yet it seems capable of fulfilling all the demands of its position without in any way coming under the classification of the cheap car—a point which is by no means to be considered lightly. It is simply a full fledged four cylinder touring car, equipped in the most modern fashion and mounted in a thoroughly workmanlike manner, comparing favorably with the most expensive types, yet produced in an economical way which permits of its distribution at a most "fetching" price.

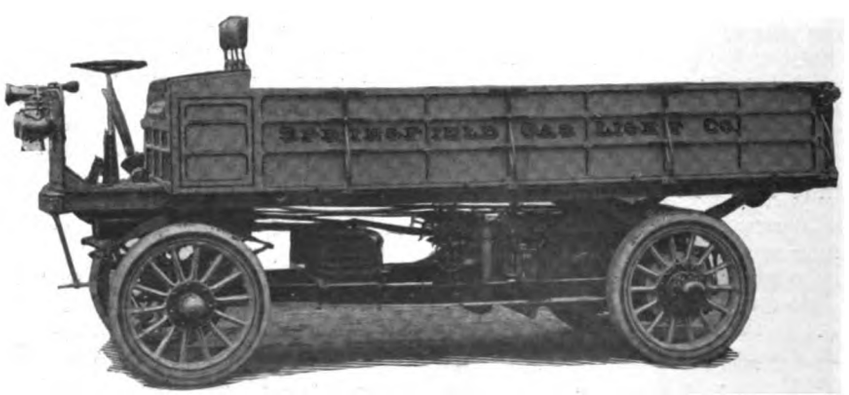
In detail the specifications of Model D-4 include the four cylinder vertical motor, dimensions 4¼x6 inches and rated at 24 to 30 horsepower, built according to the best practice of the day and regulated in the most approved manner. The cooling operation is performed by the aid of a cellular radiator, with a suction fan mounted directly behind it. The carburation is automatically regulated, and the lubrication of the motor and other important parts of the machine is by a mechanical device.

The transmission of the motive power to the driving gear is by means of a three speed transmission, which gives a direct drive on the highest connection, all gears being out of mesh at the time. The final transmission is through a cardan shaft and bevel gears.

The running gear of the machine is mounted on 32-inch artillery wheels, shod with 4-inch tires, spaced 100 inches on the base by 56 inches tread width. The suspension is by 40-inch half elliptic springs, both front and rear sets being of the same size and pattern, and the steering arrangements give a complete and an irreversible control under all circumstances. The handling mechanism is simple and efficient, the motor being controlled by means of the spark and throttle, and the foot brake and hand operated emergency lever giving ample stopping power for all possible contingencies. The finish has been most carefully worked out, and the appearance of the machine is decidedly pleasing to the eye, while its road performance, which under favorable conditions reaches up to forty miles an hour, is all that could be required.

Test That Decided a Truck Purchase.

Although the Springfield Gas Light Co. has its plant and offices in Springfield, Mass., its purchasing agent, F. L. Belcher, is evidently from Missouri, in that he "has to be shown" when it comes to buying motor trucks. The test of two trucks, which has convinced Mr. Belcher and resulted in the placement of an order for an Atlas truck with the Knox Motor Truck Co., was this: The two trucks were each loaded with 6,000 pounds of pipe, together with four men, and, starting from the gaslight company's office, the drivers were instructed to deliver their loads seven and three-quarter miles distant and return. The Atlas, which is reproduced above, delivered its load in 37 minutes and returned unloaded in 30 minutes. Its competitor took 7 minutes longer on the out trip and was 5 minutes slower on the return.



Grout Beats the Lady.

Miss Helen Walker, a St. Louisan, who sued the Grout Bros. Automobile Co., of Orange, Mass., for the purchase price of an automobile, $700, alleging the car did not equal representations, has lost her case. Miss Walker bought the steam car at the St. Louis (Mo.) exposition last summer, but after obtaining another from the factory, on the ground that the first was defective, and then deeming the second the same, she brought suit to recover. The defendants contended that Miss Walker became frightened every time she approached a streetcar in the machine, and won out.

Electric Light for a Penny.

A recently added feature of the Paris taxameter cabs is a prepayment device by which the occupant may provide himself with illumination if he so chooses. It is, in short, a penny-in-the-slot electric light. Just how much light is considered an adequate return for this quid pro does not appear, but it is evident that by feeding the machine with coin the illumination may be made continuous.

Tire Thieves Tour the West.

Appleton, Wis., has a new kind of thief—the automobile tire purloiner. The culprits enter garages and even go so far as to take the tires from wheels of cars standing in the streets. As owners in neighboring cities have complained recently of these tire marauders, the police believe there is an organized band travelling from city to city. As yet they have not been apprehended.

J. A. Cramer, the Buffalo dealer, is adding a sundry department, and will actively enter the lists as a jobber. He will keep two men on the road, covering the Western New York territory.

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ABOUT CYLINDER CONSTRUCTION

Wide Variation That Prevails and What It Suggests—Recent Remarkable Departure.

In the matter of cylinder construction, the common practice of gas engine design seems not to be approaching a point of finality as rapidly as it is in other directions. A considerable variation in the methods of casting the cylinders is noticeable to a very great extent, the divergeance including not simply the arrangement of the units in single or multiple castings, but also in the methods of jacketing. This fact is all the more remarkable since in other ways, motor construction is becoming fairly regulated into stereotyped lines.

Considering the various ways in which it is possible to construct the cylinders of internal combustion motors, the different types naturally group themselves under one of two heads according to whether they are arranged independently or in groups of two or more made in a single casting. Those which are of entirely independent construction may be complete in every detail, including the combustion heads and water jackets; they may have the jackets cast integral with the main portion of the cylinder while the heads are independent, being either air or water cooled; they may have separate jackets which do or do not include the heads; or they may have separate cylinder liners which are entirely independent of the main casting and are forced into place after the part containing the jacket and head has been suitably machined. Of those which come under the general classification of multiple cylinder construction, some have each cylinder complete in itself; others are complete in pairs, answering to the description of twin cylinder construction; while others have either separate heads, or separate jackets, or both, according to the fancy of the builder.

In order of development, the complete cylinder, including the combustion head and jacket, naturally enough takes precedence, as being the simplest and most legitimate form conceivable to the mind of the early investigator. Closely following upon the heels of this type, came the cylinder with separate head, made necessary by the Otto type of slidevalve engine, which was so largely used in stationary work for many years. Later on, the demand for more perfect machine work, was chiefly responsible for the adoption of the separate head which made possible a much simpler casting than otherwise could be obtained, and one which readily gave itself to the common boring machine of the day. Within a very short time, the development of special boring mills and especially those of more than a single spindle suggested to designers the possibility of cheapening the first cost of machining and at the same time increasing the accuracy of construction by using a multiple cylinder casting and machining it at a single operation. Hence, first of all the twin cylinder, and later, the multiple cylinder construction, which may be extended to embrace three or four cylinders in a single piece.

In the meantime, other consideration made the use of independent jackets seem much to be desired to certain designers, chiefly for purely mechanical reasons connected with the pouring of the metal and its subsequent treatment, and thus, the development of what may be called the sectional type of cylinder construction was brought about. In some instances the single cylinder arrangement is adhered to, the jackets or heads or both being separately constructed, while in others, the cylinders are made in pairs, and the jackets and heads are independent. There seem to be but two extreme variations from the classification of the two general groups, both of which are on the order of sectional construction. One of these, which has been in use on an English machine of repute for several years, comprises the use of a separate steel liner forced into the body casting of the cylinder, which includes the lower portion of the cylinder and the jacket, while the other, an American innovation at this time, consists of the application of twin cylinder heads to independently cast and jacketed cylinders.

The problem of cylinder design for gas engines which are to be applied to automobile work, is considerably complicated and altered from the corresponding problem in light steam engine design, its only precedent, first of all by the fact that much greater temperature and pressure ranges are to be dealt with, and, second, that the motor itself, when completed, instead of being cradled on a solid masonry bed, is suspended upon a more or less elastic framework, which in itself is liable to considerable gyration, and the entire fabric is then buffeted about over the face of the earth in a manner which is calculated to set at naught the most rational of calculations made according to the accepted standards of steam engine design. Of these considerations, probably the most important, is that relating to the tendency to distortion of the engine itself, owing to the excessive pressure which are encountered at certain portions of the cycle. This factor decreases in importance in proportion to an increase in the number of cylinders when the entire structure is considered, but as far as the individual cylinders are concerned, is not affected unless the multiple construction is resorted to.

In this way, then, a gain in addition to that due to a possible reduction in the cost of manufacture, is obtained by the use of two or more cylinderers cast together, since each serves to protect the alignment of each of the others. The ideal engine would, of course, be one in which there were no separate stationary parts in the main structure and, of course, the closer approximation to the ideal condition, the better, other things being equal. But, on the other hand an argument which militates strongly against the use of multiple cylinders, is that the expansion of so complicated a casting as is necessary under the circumstances, must of necessity be very unequal, and as it is quite customary to use an aluminum base in light motor cars, the internal strains set up between the two portions of the structure must be terrific when it is considered that the coefficient of expansion of cast iron is something like 45 per cent. lower than that of aluminum. Also in the case of the base and cylinders being constructed of the same metal, it is evident that the difference in temperature between different portions of the structure must be sufficient to cause considerable stresses, which ought to be reckoned with in the design of the motor.

Another argument against the use of this type of construction and one which furnishes as well the chief point in favor of the unit construction, is that of economy of upkeep. With the several cylinders cast in one, any derangement in one which entails its being examined, involves the complete dismantling of the entire motor, an amount of labor which otherwise would be unnecessary, and also, if one cylinder be at fault, the entire number must in many cases be discarded in order to replace one, the only alternative being that of reboring one and fitting it with a larger piston, in case the bore is affected. or, in the possible event of a breakage, the installation of a new set of cylinders is inevitable ordinarily.

Principally on account of this flaw in the success of the multi-cylinder construction, and also because of the employment of modern rapid production machinery, which makes possible the speedy completion of a greater number of individual cylinders than was formerly possible, the unit type of construction is in most common use. Its faults are numerous, including in addition to the cost factor, and that of less rigid preservation of the engine alignments, an unavoidable increase in the over-all length of the motor, and an increased complication in the matter of connections, both for gas and ignition, and for the cooling water.

As a sort of compromise between the two, the twin cylinder type of motor seems to be retaining a hold which for a time appeared to be likely to prove sufficiently strong to oust both of the others. It considerably reduces the number of separate parts in the motor through the possibility of slameseing the ports, and cuts off possibly three or four inches in the length of the motor, besides being considerably better structurally than the individual type, and cheaper to build. The mere matter of engine length, however, is not one which is of serious moment in the design of the ordinary touring car, and the proper design of the engine base, allowing for plenty of strength under the cylinders, would seem to put the unit type on practically equal terms with it, under ordinary conditions.

Another point in favor of the unit construction, which the multiple construction does not so readily permit, is the use of the separate jacket of spun copper which is clamped in place by suitable gaskets, and in addition to a considerable reduction in weight, serves to so simplify the original casting of the cylinders that they may be of

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practically assured quality and strength throughout. This type of construction also effects a considerable reduction in weight per horsepower, and makes possible a thoroughly neat and pleasing appearance in the machine—a factor which is of no little value when sales to non-technical users are to be considered. In a single instance, to be sure, the independent jacket has been applied to the twin cylinder formation, but its use has not as yet become sufficiently general to argue its entire success.

The method of utilizing the advantages of the unit construction and at the same time gain the strength of the multiple system, by using slameseed independent heads, is worthy of serious trial. Of course, the use of independent heads is to be deplored in any machine which handles such great pressure as does the gas engine, and on that account, there is likely to be a loss of compression through the joints between the heads and cylinder walls unless the greatest of care is taken in the assembling to insure a perfect fit, and unless the best of treatment is accorded the parts when undergoing repairs. It cannot be gainsaid, however, that but for this drawback, there is a considerable advantage in the method, and that it should be much more serviceable than any method of bracing or tying between the cylinders which might be contrived.

In the design of horizontal opposed motors, there is still considerable varience in the matter of the construction of heads, and also, to a certain extent, in jacket construction. Some very well built motors include the engine base in a portion of the cylinder castings, thus making the machine an assemblage of a very few parts. In certain cases, the heads are integral with the main casting, while in others, they are still of the separate variety. In this, however, as in the types of vertical motor, there is no absolute decision as to any one method as being of greatly superior advantage over the others.

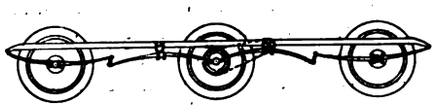
George E. Blakeslee has contracted for the erection of a two-story frame addition to his garage on the Boulevard, near Duncan avenue, Jersey City. The building will be 40x 99 feet, and cost about $3,500.

THE SIX-WHEELS IDEA

Features of the French Car in Which it is Embodied—Its Remarkable Flexibility.

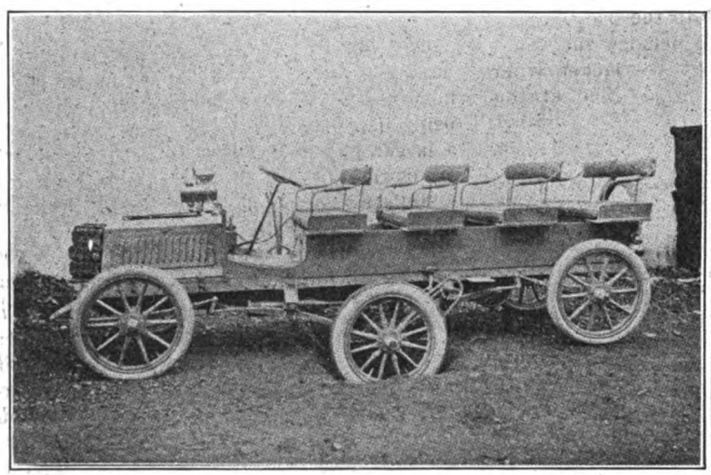
Although it is not the development of a week, nor anything of startling newness, having been frequently exploited in the French press, the six wheel car made by Turcat et Mery in France under license from M. Lindecker, certainly proved one of the attractions of the Paris Salon.

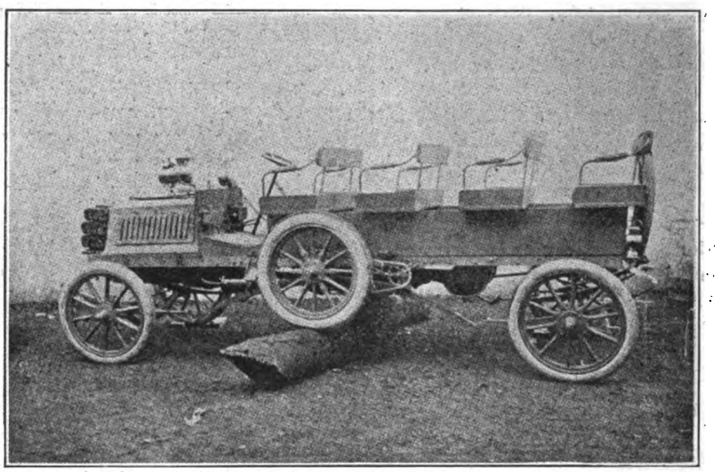
The invention really relates more to a system of flexible suspension, the outlines of which are made clear by the sketch shown, although the extra pair of wheels is of course an essential feature, for it is through the latter that the power is finally consumed in driving the vehilce. But in order to appreciate the great range of vertical movement of these driving wheels it will be necessary to refer to the photographs showing a char a banc built on this system, first in passing over a rather deep hole and in the second instance meeting with an obstruction in the shape of a log, without any of the wheels losing their normal contact with the road surface. This range is said to be equal to the total clearance of the body.



The idea of the inventor in devising this system has been to augment the size of the car without the necessity of increasing the amount of power employed. In order to render possible the use of an additional pair of wheels, a special system of suspension has been found necessary, consisting of springs interposed between each pair of the ordinary semi-elliptical springs on the front and rear of the car. These instead of being fast to the frame of the car as is customary are joined at their ends by a pair of springs which close the intervening space. These are also semi-elliptical, but are inverted and are hung from equidistant points on the frame from pins which permit of their movement about this fastening as an axis. At their inner ends they carry the axle of the third pair of wheels, which are the drivers, and are located exactly in the centre of the vehicle. The remaining four wheels are coupled so that all are utilized for steering, which permits of a vehicle of unusually long wheel base having a very short turning radius. This renders the otherwise difficult performance of negotiating sharp turns in city traffic very easy.

Among the many advantages claimed for this construction those of a more equal distribution of the weight, greater ease in steering and entire freedom from skidding stand out prominently. But in addition, the wear and tear on tires, not alone those of the four idle wheels, but also those of the drivers, is claimed to be far less than where but four wheels are used. Whether this saving is sufficient to offset the greater additional first cost of an extra pair of tires cannot be said. The char a banc shown by the photographs reproduced herewith has been in continual use for a number of months, even taking part in a hill climbing contest, and is said to bear out all the claims made for it.





When Looking for Trouble.

It has been aptly stated that the difference between a steam and a gasolene engine is, that it takes but a minute to discover trouble in the former, but an hour to right it, whereas in the latter an hour is spent in locating the source of trouble, and a minute to set it right. There is a measure of truth in the comparison, but much of it is based on the aimless manner in which many chauffeurs set about to look for the cause of a stop. One authority has compiled a list of thirty different "pannes" that may occur to the motor, any one of which may cause it to cease operations, and advises that they always be tried in rotation. It is rather a lengthy process, but it would be necessary to go through it far less frequently were each item tested out thoroughly before going to the next. System will accomplish in a fraction of time what aimless dabbing here and there may never reveal.

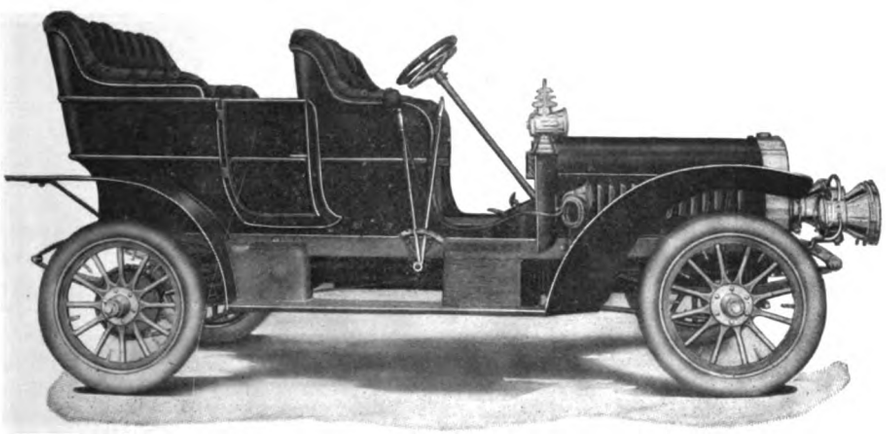
The Automobile Storage and Exchange Co. has taken the agency in New York, New Jersey and Connecticut for the Moline car.

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RAMBLERS WITH FOUR CYLINDERS

New Cars Full of Impressive Features—Simplicity, as Usual, a Keynote.

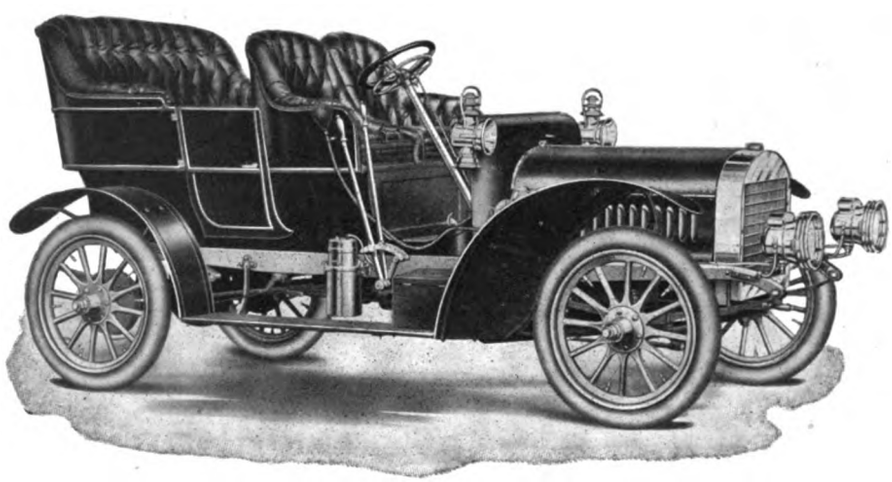
When during the last two years the question has been put to any of the Rambler agents, "Why is there not a four-cylinder Rambler?" the invariable reply has been, "Because Thomas B. Jeffery & Co. are not yet ready to build one." From which, considering past performances, the inquirer naturally inferred that when the time was ripe Thomas B. Jeffery & Co. would build a four-cylinder car, and that when that car appeared it would be ready for the road, a finished mechanism, upon which all experimental work had long been completed. The prophets have foretold that the beginning of the year 1906 would be the psychological time for the debut of such a car or cars, and the prediction is fulfilled by the appearance of the cars themselves, constructed in the fashion which has made possible the growth of the Rambler business, and characteristically up to date in all respects.



35-40 H. P. RAMBLER, MODEL 15, CHAIN DRIVE.

Including the innovations in the way of four-cylinder machines, the Rambler line for the coming year embraces seven distinct and different models, four of which are equipped with two-cylinder engines, and three with those having four cylinders. Of these, the most diminutive will be a runabout, Model Seventeen, having a double opposed horizontal motor rated at from 12 to 14 horsepower, and having 4 by 5 inch cylinders. The essential features of this model will be similar to those of the present types insofar as general detail is concerned. The transmission will be of the planetary type especially contrived for this machine, and notable for its light weight. The wheel base will be amply long a most modern attribute in runabouts, and the wheels will be 28 inches in diameter and fitted with 3-inch detachable tires. The equipment of tools and supplies will be complete, making the outfit in nevery respect complete and efficient. As an option, this machine will also be equipped with a detachable tonneau body and fitted with larger tires.

The models known as Surreys, Types One and Two, will still be marketed, their construction and equipment being unchanged as far as is consistent with good running results, and to the line will be added another Surrey, Type Three, which is a perfected type of the first in order, equipped with a body similar to that used on Type Two. It will have an improved detail construction, and have a more elegantly appointed body, thus satisfying the demand for a high grade two-cylinder machine of superior fitting and quality, yet marketable at a price lower than that which the four-cylinder machines command.



20-25 H. P. RAMBLER, MODEL 14, SHAFT DRIVE.

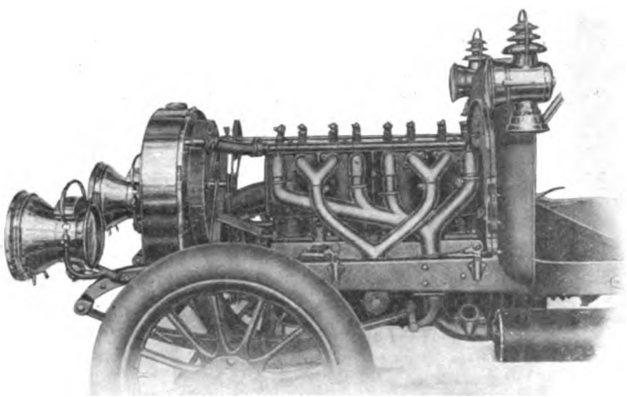
Models Fourteen, Fifteen and Sixteen, are of the quadruple engine pattern, embodying many new features, and thoroughly in accordance with the demands of common practice in every way. The details include such familiar terms as, mechanically operated valves, force-feed lubrication, jump spark ignition, sliding gear transmission, and Rambler throttle control, which last feature is common to the entire line. Model Fourteen is rated at 20-25 horsepower, and Model Fifteen, at 35-40, while the car known as Model Sixteen, is a Limousine, mounted on a Model Fifteen chassis.

The power plant of Model Fourteen, consists of a vertical 4 by 4 1-2 inch motor, driving a live rear axle through a three speed sliding gear mechanism and cardan shaft, which is completely inclosed. As will be seen from the accompanying illustration, the valves are located in the cylinder heads, and are actuated by means of vertical tappet rods moving rocker arms which are mounted on brackets carried by the heads themselves, making a neat and thoroughly accessible arrangement. This disposition of the valves also permits the employment of a simple arrangement of the piping and facilitates the carrying out of the cooling function. In this, a direct circulation between the cylinders and the radiator is attained by means of a positively actuated centrifugal pump mounted on the cam shaft at the forward end of the motor. The radiator, which also serves as a tank, has a cooling surface which amounts to something like 118 feet in the aggregate, which, with the forced draught of the fan directly behind it furnishes ample cooling effect for every possible condition.

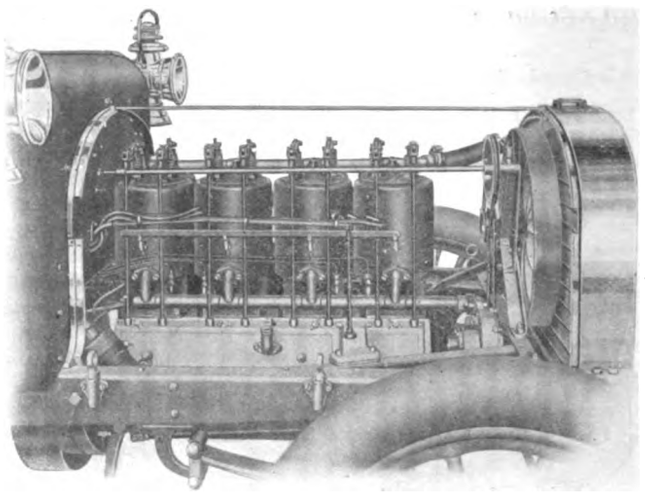
The primary energy for the jump spark ignition system is supplied by a six-volt sixty-ampere storage battery, the step up for the secondary being accomplished in a multiple-unit coil of special construction. The time of the spark is automatically controlled by the adjustment of the throttle wheel, which is arranged to control the motor in the ideal way for all ordinary conditions grading the time of ignition in proportion to the amount of throttle opening. For the purpose of sudden acceleration, a foot pedal is provided which acts upon the gas alone. Thus the feature of "one hand control," which has hitherto been a strong talking point, is retained, the use of the accelerator being confined to emergencies.

The carburetter has been newly designed, and is arranged to furnish a properly graded mixture under all conditions by automatic action. It is of the common float feed type, and its action is not affected by conditions of load on the motor, the supply of gas being regulated strictly in accordance with the speed. A new muffler also is provided, its construction being such that

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SIMPLICITY OF RAMBLER PIPING.



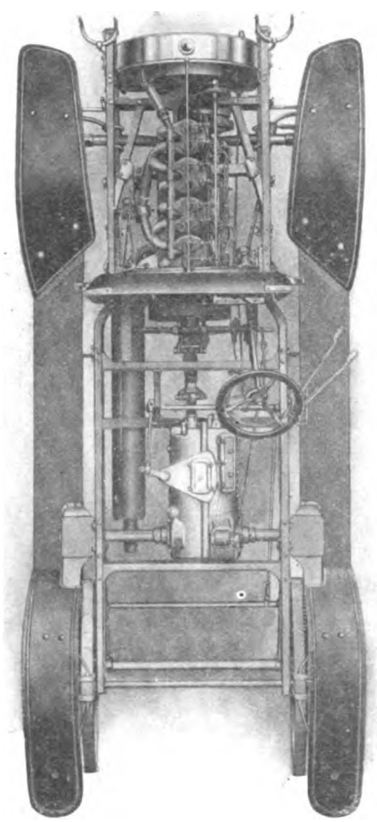
RAMBLER TAPPET-OPERATED VALVES.

the exhaust gasses are efficiently silenced without the acquisition of back pressure. A muffler cutout is provided for the sole purpose, it is said, of aiding in a proper adjustment of the working of the cylinders.

The transmission mechanism includes a flywheel clutch which is interconnected with the gear shifting lever at the side of the car in such a way that improper handling of the gears is impossible. The brakes are in two sets, the one, an inclosed running brake, acting on the differential drum on the axle, and the other being a pair of expanding rings inclosed within flanges cast upon the hubs of the rear wheels, the latter, being for emergency use. They are effectually equalized.

The motor equipment of Model Fifteen consists of a 5 by 5½ inch 35 to 40 horsepower motor of similar design to that of the type just described. In other respects also, this machine is similar to the other except insofar as the difference of power has necessitated alterations in the dimensions of parts, with the exception of the transmission. In this the drive is by double chains to the rear wheels, the countershaft being enclosed in a heavy housing which is made integral with the gear case, and extends to the side frame members, thus forming a very rigid mounting. The support of the front end of the case is upon a single point on a transverse member of the frame, and that of the rear end is entirely placed upon the countershaft housing, so that the desirable feature of three-point support is obtained. As a protection for both motor and transmission mechanisms, a universal joint is placed at either end of the clutch shaft, thus rendering the entire mechanism of the plant self-aligning and self-adjusting. The rear sprockets are made integral with the wheel hubs and brake drums, their teeth being cut directly in the circumference of a flange on the latter.

The mounting of this type is thoroughly in accord with the demands of the best practice in touring car design, the wheel base being 112 inches, the tread 56½ inches, and the suspension consisting of 40-inch semi-elliptic springs in front and full elliptic in the rear, both sets being of the same length. The frame is of pressed steel, channel section, and the axles are tubular. The fuel capacity is fifteen gallons, and the maximum speed on the direct drive is rated at fifty miles an hour.



RAMBLER CHASSIS.

Radiators Hung on Trunnions.

A rather important point in the mounting of one of the foreign cars which is to be seen at the Paris show, is that the radiator is hung upon trunnions under the fore part of the frame thus allowing for a certain amount of working in the structure without any danger of leakages being caused as a result. It is beyond a doubt true that in many instances otherwise unaccountable leaks have been occasion by no less a cause, and it is only a wonder that hitherto no provision has been made to allow for the warping of the frame without affecting this most important part of the power plant. Similar arrangements protect the engine, and gear case in almost all cars, but the radiator is generally allowed to bear the brunt of the manifold strains which are bound to occur.

Pierce's School for Pierce People.

The George N. Pierce Co., of Buffalo, have inaugurated a school for owners and drivers of Pierce Arrow cars. The sessions are held every other fortnight, and last for a week. The instruction is entirely gratis, and invitations are forwarded to all owners of the company's cars to attend.

Experts in motor construction and automobile manufacture generally take the candidates through the rudiments of gasolene engine design and operation, basis principles being demonstrated with the aid of liberal facilities at hand, and so on up to the higher plane of efficiency, the class assisting in assembling of a complete car during the week's course. The makers consider that a more intimate knowledge of the machine on the part of the owner and driver will make the latter more capable to effect the numerous minor repairs which, when neglected, culminate sooner or later in serious trouble.

Telling the Tale Plainly.

"The Motor Car Dissected" is the title of what probably is the most readable and instructive booklet regarding automobiles yet issued. It has just been published by the Winton Motor Carriage Co. for the "guidance of Winton sales agents." It is a leather covered, handsomely printed little volume of forty-eight pages, of pocket size, in which in plain, non-technical English Sales Manager Shanks presents the very arguments and answers them that are neces-ary or that arise when the sale or purchase of a car is under discussion. He takes up each separate vital part and process, and shows wherein the Winton is superior, and does so in a fashion that leaves nothing to be desired.

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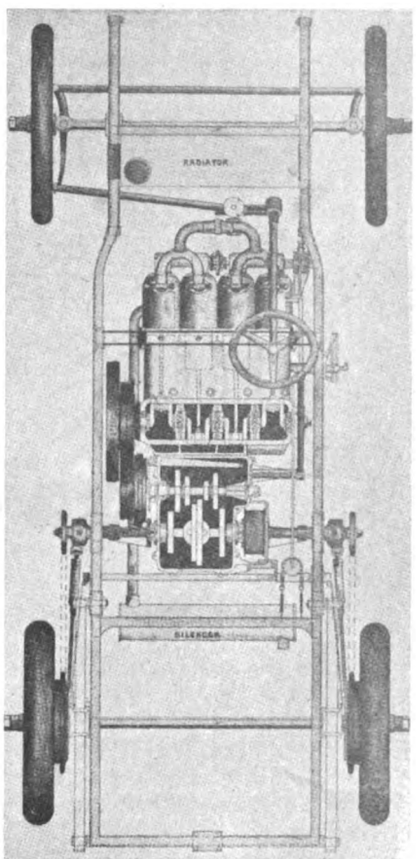
DISPLACING THE BONNET

How Some Britons are Going About it— Novel Engine Position in one Effect.

Radical novelty of design is now a thing frowned down by maker, dealer and buyer with one accord. The buyer has but one desire and that is to become the owner of a car that is au fait in every respect and more particularly as regards appearance. The dealer will, naturally, only put his seal of commendation on something that possesses the easiest selling qualities and the manufacturer must conform his designs thereto. English makers have apparently not fully weathered this period; some of them are still in that intermediate stage represented by something between the Simon pure freak and the design which conforms in many respects with current usage, but still retains individual features to an extent more than sufficient to place it in a class apart. In this connection, it is to be noted, that the builders of the Arrol Johnson car, which, with its double piston motor, achieved such a victory in the tourist trophy trials, have made the leader of their line a car of the regulation type in every respect.

One of the few cars to be seen at the recent Olympia show, which differs from its confreres to an extent that attracted attention, is the James and Brown. As will be seen from the accompanying plan view of the chassis, the engine is of the usual four cylinder type, but is placed horizontally with the open ends of the cylinders, all facing one way—toward the rear. They are of 4½ inch bore by six inch stroke, and the makers give the buyer an option on automatic or mechanically operated induction valves. In the latter case they are operated from a cam shaft running across the rear of the cylinders. This is driven by a longitudinal shaft and spiral gearing from the crank shaft. Formerly the flywheel of the engine was placed between the cylinders and in the centre of the crank case, but is now on the left hand and outside, the projecting end of the main shaft carrying the wheel now running in a long bearing running right up to the boss of the flywheel web. The crank case and the gear box are bolted together before drilling the holes for the three parallel shafts in order to insure accurate alignment. In both this respect, and that of the drive, the car is in a class of its own. The latter is through spur gearing to the clutchshaft. The clutch is of a design exclusive with the house in question and great ease of manipulation as well as efficiency are claimed for it through the fact that four springs arranged about the periphery are employed in place of the usual single spring on the shaft. In other respects it conforms to current practice. A novel form of differential is also employed, the final step in the transmission being by means of side chains.

This form, however, permits of the elimination of the bonnet, a feature so closely adhered to by the majority of other makers that it is seldom absent regardless of the location of the engine. There seems to be a tendency on the other side with certain makers to build cars without bonnets in order to provide ample room for large closed bodies on comparatively short wheelbase. The front of the car is finished off with a light



ornamental dashboard of leather which, with the driver and "man" sitting prim and erect, conveys an impression approximating that of the coachman and footman of the horse-drawn carriage—something that is apparently desired by the Briton.

Portugal as a Market.

The importation of automobiles by Portugal shows a growth during four years from a value of $37,910 in 1901 to $229,265 in 1904. During the first five months of the present year the imports amounted to a value of $81,125. Most of the automobiles sent to Portugal were built in France, 80 of the 118 imported in 1903 being of French manufacture. The United States ranked second with 13, Italy third with 10 and Germany fourth with 3. Since that year the record of origin has not been given. The duty imposed by Portugal on finished automobiles is $120, and on chassis $70.

Winton on Lubrication.

"There are more cars worn out through lack of proper lubrication than are worn out through mileage and years of use," is the sweeping statement made by Winton's "The Motor Car Dissected."

COOLED SPARK PLUGS

Three Types that Aim at the Same Result— Purposes that are Served.

Practically speaking, it would seem that the design of the spark plug had reached a point of finality, since nearly all of the numerous and extravagantly advertised types follow along the same general lines and are the same in principle. From no less than three different sources, however, there has recently come a series of attempts at an alteration which, in theory at least, should work to considerable advantage in prolonging the life of that most essential organ and increase its working efficiency as well. Whether any or all of these are destined to succeed in the long run it is, of course, impossible to say at the present time, but there is something distinctly plausible in the principle upon which they are based and there seems considerable likelihood that they will be of more than passing importance in consequence.

As is but too well known to the motorist, the chief point of failure of the spark plug is in nearly every case owing to its accumulating a coating of soot from the burning gases and oil in the cylinder, which ultimately so befouls it that it is rendered ineffective through short circuiting. In most of the better class of cars the design of the lubricating system has been so well wrought out and the carburation has been brought to so great a degree of perfection that there is but little trouble from this source, yet there is always a possibility of some derangement in one or the other of these functions, causing a failure of the ignition on this account, and even granted that under ordinary conditions the common plug of commerce would serve to advantage, still its value under all circumstances would be slight were it not capable of undergoing a considerable amount of abuse before it gave out.

Some little time ago a plug was illustrated in the trade press which had the distinguishing feature of being ventilated with pure air at each induction stroke of the piston. This was accomplished by the introduction of an air duct leading through the body of the device and terminating in a check valve which opened to the air whenever the pressure within the cylinder fell below that of the atmosphere. The theory of the arrangement was that at all times the plug was surrounded with a stratum of comparatively pure air, which not simply served to cool off the points at the time of its induction and render them less liable to retain deposits of soot, but at the same time acted as a diluent of the charge, scavenging the combustion chamber in the immediate vicinity of the spark and insuring a better ignition flame about the points than otherwise would be secured.

Still more recently have been brought out two other plugs which are constructed on similar lines, though each in a slightly different manner. In one, which is an English production, one of the spark points is of tubular

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construction, and communicates with a duct in the base of the plug, which terminates in a check valve in the base just outside the cylinder. By this means a jet of cool air is projected directly upon the insulated point immediately prior to its use, thereby cooling it and surrounding it with fresh vapor, while the grounded terminal is cooled throughout its length by the passage of the air.

In a plug of American design, which also recently has been placed upon the market, the insulated terminal is made the conduit for the cleansing draught of air, the central wire of the plug, which otherwise is of perfectly regular construction, being of tubular material and furnished at its base with an enlargement which has a cup shaped opening on its under side. Below this, and held in place by the wire which serves as the grounded terminal, is a small metallic ball, which under the action of the compression rises into the seat and closes the outlet through the duct. In this, as in each of the other forms, the action is the same, a small amount of air being drawn in at the proper time to cool the points and scavenge the charge in the vicinity of the spark.

The most natural cause of failure in a device of this kind would be through a leakage in the check valve. This might be caused in any one of a number of ways, and might in some cases be easily remediable, while in others it would become chronic. In its theoretically efficient capacity there can be little doubt that such a device should be of a certain amount of value both in prolonging the life of the plug and in rendering the ignition of the charge more certain and effective than it otherwise would be, but the introduction of so small and necessarily fragile a part as the check valve in a place which is constantly being subjected to so great strains, both owing to excessive heat and pressure, would seem to present difficulties which could not readily be overcome. That, however, has nothing to do with the success of the idea, which seems to be a worthy one.

The Chauffeur and the Speedometer.

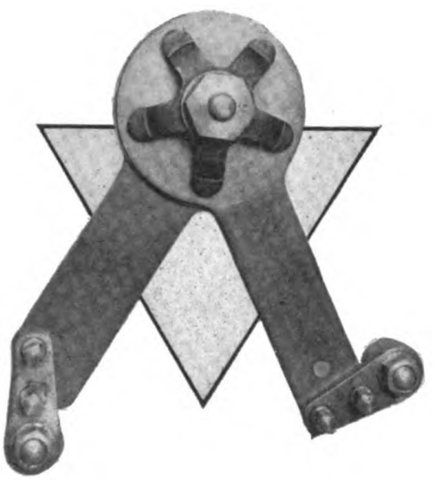
For ways that are dark and tricks that are vain the heathen Chinee has found his equal in the professional chauffeur. Although he has come upon the scene such a comparatively short time ago, it no doubt would be possible to fill a small volume with the ways and wiles that this individual resorts to in order to ingratiate himself with his employer.

One of the schemes concocted by a member of this gentry to increase his prestige sounds thin, but is good enough to be true. He boasted of having worked it successfully for a year, and finally this reached his employer's ear. The owner of the machine is very proud of it and sets a great deal of store by its distance eating capacity, and was somewhat chagrined that his chauffeur could always get the best time out of it. The owner never drove himself except when the chauffeur happened to be away, but his efforts always fell short of bringing the speedometer hand as far around on the dial. The plan of the chauffeur, it turned out, was to change the gearing of the instrument when he was to drive and set it back when any one else took the wheel.

SUSPENSION IMPROVEMENT

How a Shock Absorber Has Been at Once Simplified and Made More Efficient.

As a result of an exhaustive study of the problem of motor car suspension, which has been carried on not simply in an experimental way, but through the channels of observation opened up by the application of six thousand sets of the device on cars in daily use throughout the country under widely divergent circumstances, the Hartford Suspension Company has produced a new type of shock absorber for the 1906 market, which is a vast improvement over the model previously in use. The new type H, as it is called,



THE SUSPENSION ASSEMBLED.



ALL THERE IS OF IT.

carries out the same principle as the other, but is designed for permanent adjustment and automatic compensation for wear, besides being constructed in such a way that its effort is applied in a straight line between the frame and axle, so that all possible tendency to a shearing effect in the device itself is eliminated.

Instead of the two elements which were formerly attached to the frame and axle respectively and articulated together midway between, three members are now used, two of them being paired, and joined at their outer ends by rivets, while at the friction bearing, which is the vital portion of the absorber, they are separated sufficiently to permit of the interposition of the third member. A pair of friction washers are placed between the two outer sections and the inner one, thus securing double the amount of friction surface provided in the older model, and thereby reducing the tendency to wear by one-half.

Both arms swivel upon a hardened steel bushing which surrounds the tension stud. The latter is furnished with a lock nut which clasps an offset spider washer of tempered steel binding the moving parts together and maintaining a constant tension upon them. This washer, in which the particular merit of the improvement rests, is comprised of a circular body portion drilled out to receive the tension stud, and having five radial arms projecting from it which are bent down or offset to form feet, which hold the body portion out of contact with the outer arm. Thus the degree of tension which is put upon the friction surfaces depends largely upon the resistance of the arms of the washer and to a lesser amount upon the adjustment of the nut. Any amount of wear is in this way automatically disposed of, and the resistance of the device made constant at all times.

All the parts of the absorber are made of spring steel, and on account of the high grade of metal used, they are appreciably lighter than the corresponding elements on last year's model. The friction surfaces are hardened to withstand abrasion, and the friction washers are of an especially treated grade of leather which is particularly durable. The adoption of a lock nut does away with the necessity of a clamping device such as formerly was used, and renders the mechanism exceedingly simple. All suspensions are tested and adjusted before leaving the factory, and thereafter need little or no attention, being dust proof as well as self-adjusting. The durability of the device is shown by the fact that the company's demonstrating car has now been run something over twelve hundred miles without requiring the slightest amount of attention on the part of the suspension.

The success of the Hartford system is probably without parallel in the annals of the accessory business. The sales have constantly increased throughout the past year until the work of manufacturing them, which was originally jobbed out to a well known firm of machinists, is now done in an independent plant which is running upon an altogether satisfactory and paying basis. The influx of orders from the car builders argues in its favor as can nothing else, since they are not wont to equip their cars with parts which are not absolutely requisitioned by the public, and the voluntary doubling of his last season's order by one manufacturer of note speaks volumes for his own estimation of the need of supplementary motor car suspension.

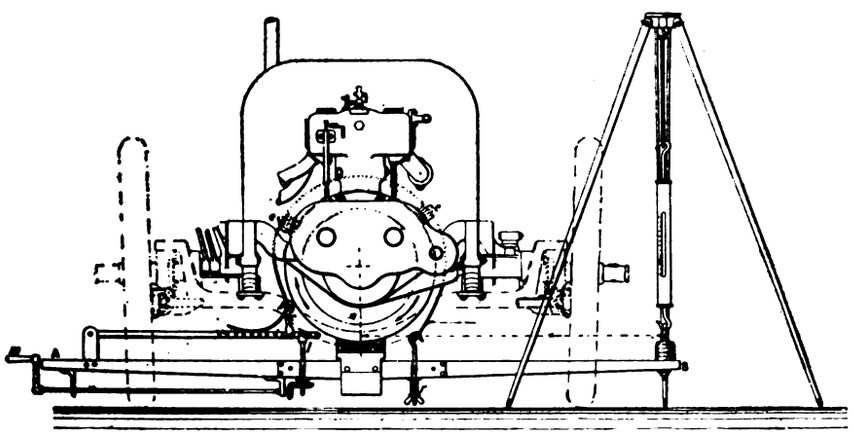
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MEASURES POWER MOUNTED

Ingenious Frenchman Devises an Instrument for the Purpose—How it Operates.

Owing to the difficulties attendant upon such an operation it is probably safe to say that the horsepower of a motor has seldom, if ever, been taken while in position on the chassis. M. Herisson, a French investigator, has, however, devised a modified form of Prony brake for this purpose, which, while scarcely destined to fulfill any large role from the very nature of the conditions, is of considerable interest.

There are three essentials that must be



ascertained in the carrying out of every horsepower test. These are a means of arriving at th exact amount of pull or torque generated by the engine, the speed in revolutions per minute, and a means of varying the drag of the brake at will. It will readily be apparent that practically insurmountable difficulties present themselves in connection with the use of a Prony brake of the usual type in connection with a motor mounted on its chassis. This modified form of brake consists of a wooden lever AB, as shown in the accompanying illustration, carrying an equalizing weight at the right hand end, at which is attached the hook of a spring balance supported from a tripod. At its centre, provision is made for the attachment of a metal collar armed with wooden brake shoes and adapted to encircle the flywheel of the motor which revolves in the direction indicated by the arrows.

This arrangement is a substitute for the weighted lever of the ordinary prony brake which the vibrations of the motor and chassis would tend to render uncertain in operation. The brake itself is suspended at each end from a hook, a series of holes being made in the left hand end to permit of adjustment for varying diameters of flywheel, the pressure being varied by means of a shaft and bevel gearing operated from the crank M. A helical spring damper is placed on the fixed screw at the right hand end, this serving to suppress any jerking movement that would be unavoidable otherwise. At ee the periphery of the brake band is drilled to permit of the placing of the wooden brake shoes, which are made of varying lengths in order to correspond with the size of fly wheel carried by the motor under test. The horizontal wooden lever also has a series of holes drilled in it, so that the screw r, carrying the fixed end of the brake band, may be moved in either direction for the same purpose.

A liberal application of grease to the collar is an essential preliminary to the carrying out of each test. If the duration of the latter exceeds two or three minutes the heat developed by the friction is apt to set fire to the wooden brake shoes, although provision against this may be made by arranging a jet of water that should be directed at about the centre of the flywheel from above. When this is done a screen must be provided for the carburreter, and probably for the ignition leads in order to prevent the water splashing on them. When these precautions are taken it is possible to make readings of far greater accuracy as the balance is permitted to come to rest; whereas, if the time of making the test is limited by the necessity of preventing the apparatus from taking fire through the amount of heat generated, the balance spring does not have sufficient opportunity to remain still.

The next essential is a knowledge of the speed, and this is readily ascertainable by means of an ordinary dynamometer if the end of a shaft with a centre point on it be accessible. As the latter is made in truing up the shaft before putting it in the motor the only difficulty presented is the matter of accessibility. Owing to the vibration of the motor and frame at high speeds an exact reading by merely holding the instrument against the swiftly turning shaft would be next to impossible, and in order to overcome this M. Herisson has made provision very similar to that employed in the brake, that is, the use of a spring to absorb the unnecessary movement. This is in the shape of a helice of steel wire contained in a small cylinder open at one end. At the latter point the spring engages the end of the instrument, while the plain cylinder is held in the hand.

But few motors have the main shaft in an accessible location, and in such a case acquiring the necessary information is somewhat more difficult. An eight tooth bicycle sprocket is placed on the exhaust cam shaft, and a thirty-two tooth sprocket is mounted on a plate adapted to be bolted to the frame of the motor in a convenient location. A bicycle chain is employed to transmit the power. A boss or projection is made on the larger sprocket, which permits of the speed being ascertained by pressing the finger against as it turns. It has been found possible to count the revolutions in this manner up to 250 per minute with accuracy, and as the wheel in question is running at a speed of one to eight with relation to the main shaft of the motor, this gives a maximum of 2,000 r. p. m. ascertainable by this method.

The manner of conducting the tests is somewhat as follows: The operator counts the turns with the aid of the second hand of a watch and directs an assistant to apply the pressure by tightening the screw; meanwhile, another assistant in charge of the motor, manipulates the throttle and spark advance in order to obtain the greatest amount of power. When the latter point is reached, the brake band being compressed to its maximum, the operator counts the number of revolutions for a determinate period such as twelve seconds, for instance. Multiplying this by 40 will give the speed developed. Taking this result, and again multiplying it by the pressure indicated by the spring balance and dividing by 750, will give the amount of energy expended in French horsepower, the formula corresponding to the English 33,000 foot pounds per minutes, being the number of ,kilogrammetres per second divided by 75.

With the aid of this apparatus it is possible for the chauffeur to test the power of the motor in a comparatively short time and without great inconvenience. By carrying out such tests after the motor has been in constant use for a year or more, it is possible to note by comparing the result with the maximum rated horsepower when new whether the motor has deteriorated or not.

Air Chamber in Cooling System.

An English manufacturer has installed an air chamber in the cooling system of his motor for the purpose of steadying the pointer of the manometer or gauge which mounted on the dash to show the amount of circulation of the water. Doubtless the steadying effect would also be to a certain extent imparted to the entire system and an increased steadiness of flow thus secured would be of benefit in cooling the cylinders.

Inspection Pit Ready for Use.

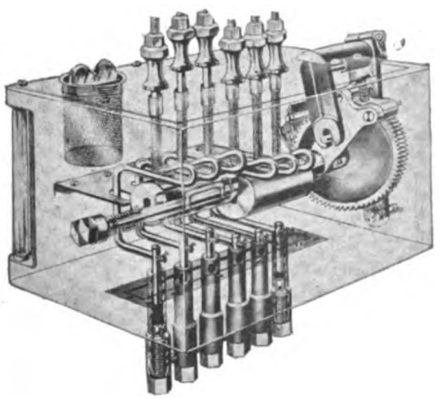
One of the novelties in the accessory line which has just been brought out is a corrugated steel inspection pit which is made and sold complete in every detail, including sides, flooring and tap, the metal being protected from decay by a coating of some resisting material. In order to install it, all that is necessary is to dig a hole in the ground and bury it to the edge, no sort of foundation or setting being necessary.

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Kinsey's Lubricators and Radiators.

Given a good engine, it is universally conceded that the most important essential to its continued smooth running and long life is proper lubrication. No other requirement means so much to the wearing qualities of a motor as a proper supply of the right kind of oil. But it is easier to get the proper oil than it is to supply it to every moving part of the motor that requires it, just when and where it is needed and in the quantity required, consistent with the speed.

The Kinsey Mfg. Co., of Dayton, Ohio, who are specialists in sheet and cast metal parts have made a study of the subject of lubrication for the automobile motor, and have as a result placed the "Kinwood" oiler on the market. The chief aim in its design has been simplicity, and it has been achieved by the use of a minimum number



of small moving parts, as will be apparent at a glance at the illustration picturing its entire mechanism. Particular attention has been paid to the matter of regulation, which ranges from half a drop to fifteen drops for every 320 revolutions of the driving shaft. All adjustments are outside the case, and each pump can be worked by hand independently to flood its bearings without disturbing them. A constant, uniform pressure to each lead just when needed, coupled with instant stopping and starting with the motor, are advantages that make for economy as well as cleanliness. A further feature is the location of the only stuffing box above the oil level, thus avoiding the possibility of leaks.

Another specialty of the same manufacturers is a line of radiators, of which a sample is here pictured. It is said to be the result of careful experimenting to attain efficiency and liberal water space without the delicate construction that sooner or later leads to opened joints and annoying leaks. In accordance with the well established principle that radiation is greatest at the points and edges of a surface, high efficiency has been secured by the provision of a very large percentage of the edge fin surfaces, all in close proximity to and having contact with the body of water. The water spaces are 3 9-16 by 3-16, large enough to allow an unobstructed flow without danger of stoppage by scale or sediment, yet thin enough, in connection with the large fin surface, to cool rapidly. The flat tubes are flanged into tanks at top and bottom and are of such a



shape that decided crystallization does not cause leaks. In case of accidental damage the "Kinwood" radiator is easily repaired, because the joints are few in number and every one of them can be reached with a soldering iron from the outside.

Other specialties of the Kinsey Mfg. Co. are hoods, fenders, tanks, in all styles and sizes; pressed steel frames, one piece pressed steel dashes 4 inches deep, brass mouldings for steps, tool and battery boxes, a gasolene gauge showing the height of fuel in the dark as well as daylight, and other similar parts in sheet meal.

Foot armer Using Exhaust Gas.

Utilizing the spent gas has long been the dream of many inventors which few of them have been able to successfully realize. Willis F. Seaman, of Mineola, N. Y., is one of the few. He has made it of use in keeping the motorist warm—a prominent subject at



this season of the year—and has his foot warmer, which is shown by the accompanying illustration, ready for marketing. It is made of cast iron sheathed in aluminum, and is connected by piping with the exhaust tube; the degree of heat is regulated by a three-way valve. The warmer may be, of course, placed either in the tonneau or at the feet of the occupants of the front seat, there being no limit to the length or shape of piping that may be used.

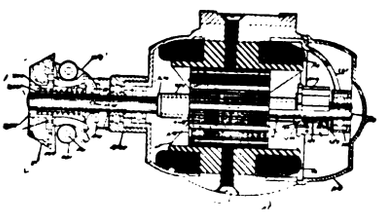
Whom Christian Science Chauffeurs Help.

"It's no good trying to keep a car in running order by Christian Science methods," said the head of a Chicago repair shop. "It may cure the headache or gout to sit down and assure yourself that there's nothing the matter with you. But the lazy chauffeur who looks after his car on Christian Science principles brings us our best business."

Apple's Automatic Charging Set.

In view of the largely increased number of accumulators employed for ignition purposes, an automatic charging set on the car itself forms a convenience of great utility. It has been something long desired by numerous owners in a more perfected and practical form, and the Dayton Electrical Manufacturing Company, have had this demand in mind when planning their new Apple automatic storage battery charger for 1906. In size it is a trifle larger than the old Apple ignition dynamo and its capacity has been increased in proportion.

The new machine is designed to generate three amperes at ten volts at a speed of 1,400 r. p. m., and will charge a four cell battery at this rate; for a three cell set, or 6 volt battery, the speed may be reduced to 1,200 r. p. m., and for two cells to 1,000. As shown in the accompanying sectional view, it is fitted with the Apple 4 inch, bevel drive



friction governor, but the machine may be driven by belt, chain or gear, as desired.

Its construction throughout is characterized by the same high standard of excellence of material and design usually only found in large and costly generators. The armature core is built up of japanned iron discs forced together under heavy pressure on a brass sleeve which is in turn keyed to the tool steel shaft. Hydraulic pressure is also employed in assembling the commutator, which is made of segments of drawn copper with mica insulation in accordance with current high grade practise, so that there are no screws or loose parts. The fields are form wound and heavily taped and shellacked, additional insulation being forced into the armature windings by a vacuum impregnating system. The same iron clad, totally enclosed form is adhered to, thus excluding all dirt and water, and it will be marketed with two types of bearings; a plain bearing type with renewable phosphor bronze bearings and wick lubrication, and a ball bearing type fitted with Hess-right ball bearings under the customary guarantee of the latter makers. The manufacturers of the "Apple" dynamo claim for it a maximum output at a minimum speed, as well as the fact that it will not show a drop in voltage from no load to full rated capacity.

Winter Care of Tires.

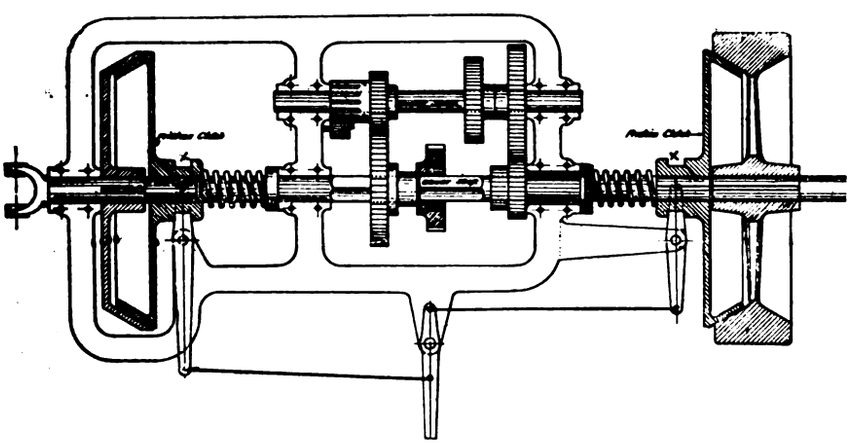
When cars are laid up for the winter the tires should be removed, and, with the inner tube inflated, hung in a cool, dry room. It is also important to care for the rims to avoid the rusting which often comes to later help wear out the rubbers when put on for use again. A method of treating rims which has been found to work efficiently is to put on two coats of black asphaltum, the second to be applied at least a month later than the first.

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TO PREVENT GEAR CLASHING

Friction Clutch Idea Brought to Bear on Sliding Gear—How it is Carried Out.

Clashing long has been a drawback of the sliding type of change speed gear and innumerable attempts have been made to overcome it, most of them taking the form of a changed arrangement of the pinions themselves. The desirability of perfecting a gear that will not possess this disadvantage is self-evident, for even the experienced driver is at times not proof against an error in manipulation of clutch and change speed levers that results in injuring, if not stripping the teeth altogether. The trouble centres in the momentum of the male portion of the clutch and shaft, which continue to revolve for a short time after the clutch is out of engagement.



One of the latest preventives designed for this purpose consists of a duplication of the friction clutch, the second one being placed between the change gear and the propeller or countershafts, as shown in the accompanying illustration. Both clutches are operated by the same foot pedal and act in unison. This results in isolating the change speed gear at both ends whenever it is desired to alter the ratio. In addition to this, the device embodies two brakes on the clutch collar shown at X in the illustration. These are connected with the yokes and act as a brake on the transmission when the clutch is withdrawn. This, together with the friction of the gears and the deterrent effect of heavy oil used in the case, is claimed to be sufficient to bring both shafts to an instant standstill. It is further claimed to save the wear on the teeth which may in consequence of the certainty of the stoppage be made square instead of rounded as is customary in order to avoid too sudden engagement. Another feature is the greater relief of the transmission from starting strains due to the slipping of the two clutches.

But just there comes the rub. It is a question that would appear to have but one answer, as to whether in duplicating this part of the transmission, a source of trouble as well of advantage, has not likewise been doubled. One leather faced clutch is usually considered sufficient and the placing of another in such an inaccessible place would be conferring a doubtful benefit on the driver whose duty it was to look after them. So far as expense is concerned, the addition of another clutch of this type would not be deemed excessive on the average high powered car, for it is a simple and inexpensive piece of mechanism. When it is a question, as suggested by the inventor in his claims, of placing a friction clutch "of any desired style," which may be taken to mean those of more advanced type such as the multiple disc, not alone the matter of increased initial cost would be involved, but the advantages of the plan of placing two of these clutches where one is sufficient would not be striking. Such a clutch of approved style is very small by comparison, and of light discs, so that it does not possess the disadvantages of excessive inertia and momentum which increase so rapidly with the weight and distance from the shaft.

Nashvillians' Striking Window Exhibit.

When the garage of the Southern Automobile Co., of Nashville, Tenn., reaches completion, which will be in the near future, it is the claim of the citizens of that city that nothing else of the kind in the South will be in the same class with it. Its owners are agents for the White cars, and a striking feature of the establishment will be a huge central show window containing a car mounted on a ball bearing turntable. The mechanism and wheels of the car will be kept in motion while the table revolves, turning it so as to be viewed from all points. The realism will be added to at night by the use of acetylene headlights. Back of this exhibit will be an ornamental auditorium on a diminutive scale, from which would-be purchasers may regard it at every angle without the necessity of leaving their seats.

Stage Line Goes Under.

The Commercial Transit Co., which has been operating an automobile stage line between Springfield and Jamestown, Ohio, has gone into the hands of a receiver. Joseph Lessner, who secured a judgment for $40.78, was the petitioning creditor. Clifton P. Grace was named as receiver.

SPUR GEARS FOR FINAL DRIVE

Few Efforts in that Direction—One Ambitious Attempt and the Methods Employed.

Up to the present time the use of spur gears for the purpose of securing the final drive to the rear wheels of motor cars has been almost wholly confined to those electric machines which have been equipped with separate motors directly geared to the wheels, all attempts at gear drive for steam and gasolene machines being confined to the use of the cardan shaft and bevel gearing. Apparently this practice is working out in an altogether satisfactory manner, judging from the extent of its adoption, and the slight amount of trouble which is experienced from cars so equipped; but at the same time it is not at all surprising to observe that at least one maker has endeavored to solve the problem of gear drive by the use of spur pinions mounted on a sort of supplementary driving axle and meshing directly with gears upon the wheels, which themselves run idle on a fixed axle.

In order to accomplish this the gear case is placed well to the rear of the machine, and the counter shaft, which is inclosed within it, is furnished with two sets of universal joints, which supply means of direct connection with the driving pinions at either side. The latter are mounted in dust proof housings, which also include the driven gears and protect them. In this way the mechanism used is precisely analogous to that in the ordinary chain driven machine, the spur gears being substituted for the chains.

The same machine is also unique in that it is furnished with direct drive on both the third and fourth speeds. To accomplish this a pair of concentric bevel gears are mounted on the differential casing within the transmission case, with which mesh a pair of driving pinions, the one being keyed to a shaft which revolves within a hollow sleeve upon which the other is mounted. The power distribution for the reverse and the two lower forward speeds is by means of a lay shaft, and involves no novel features. When it is desired to use the third speed a toothed member upon the single sliding set is forced into a corresponding annular space within an enlargement of the outer of the two driving shafts, thus locking the drive through the larger of the two pairs of bevel gears. A further motion of the male clutch member on the sliding set introduces it into a similar opening on an enlargement of the inner of the two shafts, thus securing a direct connection with the smaller pair of bevels and permitting the larger pair to revolve idly.

The principle upon which the change from second to third and third to fourth depends is not by any means new, having already been applied to transmissions having a double bank of spur gears constantly in mesh; but from the same token there is no reason why it should not prove effective in this particular case. The great disadvantage is, of course, that the inner shaft, having its bevel gear in constant mesh with the differential, must con-

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stantly turn whenever the car is in motion, and turn at a different rate of speed from the surrounding part in which it has its bearing, but with suitable lubrication there is no material objection to be offered to it on that score, so long as it runs perfectly idle and carries no other gears.

In regard to the method of the drive, it is evidently open to serious objection on account of the short length of the counter shaft, inasmuch as the vertical motion of the body over the axles must create a sharp angular displacement of the ends of the shaft, thus creating a varying frictional resistance in the working of the universal joints and causing serious trouble unless they are constructed with the greatest of care and are absolutely protected from dust at all times and suitably lubricated.

The Dominie's Piston Ring Discovery.

There are all kinds of "experts," in fact, it is safe to state that there is scarcely any other single term in all the great English language that is so wofully overworked nowadays as this one. And the automobile industry has more than its share of these same "experts." A New York agent tells of his latest experience with one of this gentry and claims that his hair is turning gray in consequence. He is A. L. Kull, of the Wayne agency, who recently sold a car to a dominie, and as he has a reputation for veracity second to none, his friends accept his story as gospel truth.

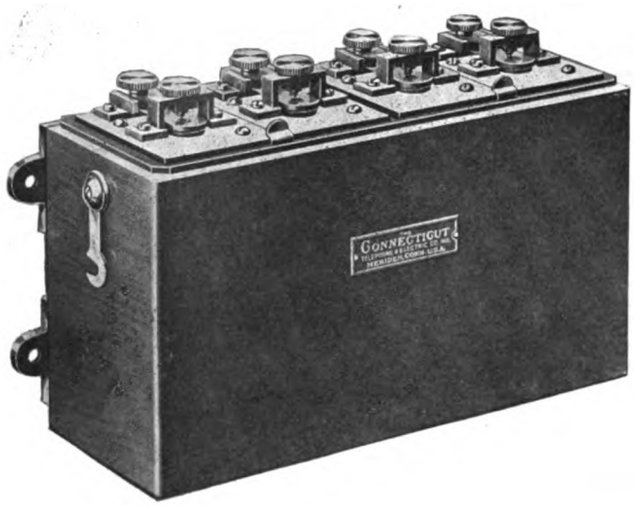
The reverend gentleman was possessed of a strong desire to "see the wheels go round" and accordingly pulled out all the "works." Then he gave it up as a bad job and called in an "expert" to put them back in place again. In a letter in which he used up most of the paper in describing his qualifications for the title including his vast and unlimited experience with gas and gasolene engines, this expert informed the Wayne company that it was their turn to furnish their customer with no less than sixteen new piston rings, as his examination showed that every one of them was broken, and further that each one was broken in exactly the same place, in exactly the same way, conclusively showing the use of defective material!

Paris to Try Gasolene Cabs.

Having experimented with the electric taximeter cabs, and found them wanting on the score of expense. Paris has decided to try all over again. Two hundred and fifty cabs have been constructed by a Levallois coach building house, and they will be fitted by Renault Freres with an 8 horsepower two cylinder motor that has been designed particularly with a view to silent running and economical operation. Some of them are already in use, and it is said that the total number will be in service by the end of the year. Paris is bound to have motor driven vehicles which can be hired at a reasonable rate, the chief, if not the only, reason for doing away with the electric cabs being the fact that their use came too high for the average purse.

Coils of Improved Unit System.

Few owners or drivers realize what a strong influence the induction coil may have on the life of the batteries. The amount of current consumed depends to a certain extent on the adjustment of the trembler, but it may also be increased by the use of poorly designed and improperly wound coils, the efficiency of which is accordingly very low.



This will explain to many why they found it so difficult to get anything like the mileage claimed by the makers, either out of a set of accumulators or dry cells; the coil has been wasting the current to such an extent that constant recharging or replacement is found necessary.

It is a phase of the art of coil making that has been made the subject of intensive study by the Connecticut Telephone and Electric Company, of Meriden, Conn., in the design of their apparatus, and as a result, they make the claim that no case has come under their observation where one of their coils used more than one-quarter of an ampere in firing the engine, regardless of its compression. Their coils are in consequence all adjusted at the factory to consume this amount of current when running.

These coils are made on an improved unit system, each coil being entirely self contained and interchangeable with any other, while the connections are all automatic, it merely being necessary to insert a unit in the dashboard case to make it ready for working. A retaining spring coupled with the accurate fit, insures connection and prevents movement. All posts for both primary and secondary terminals are on the bottom of the case which leaves the coil unencumbered when withdrawn, as pictured by the accompanying cut of a two unit set. These posts are protected by a petticoat extending around the bottom of the case and serving to effectively exclude any moisture. Extreme simplicity has been sought after in the design of the trembler which is consequently easy of adjustment, even by inexperienced hands. Turning a self locking thumb screw up or down is the only operation involved; the contact screw on the bridge is also self locking and no tools are necessary for making adjustments of any kind. In substantiation of their success in designing an effective coil the makers point to a number of records, among them one of 12,000 miles without an adjustment.



"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 15½ Nassau Street, New York.

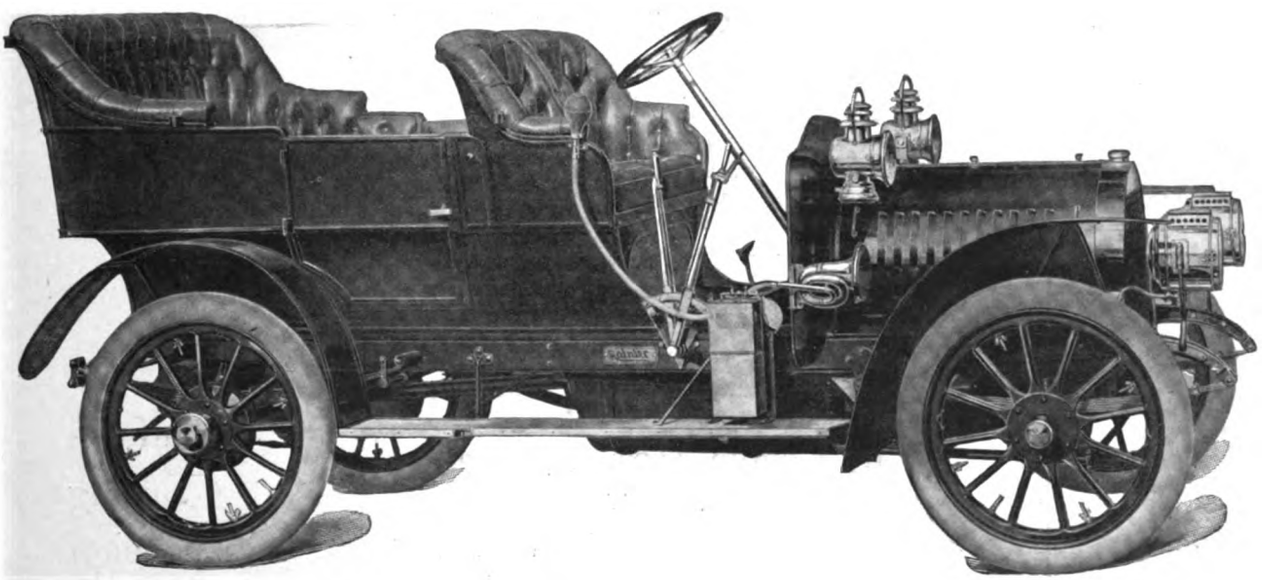
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THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

Absolutely the highest grade motor car built in this country, bar none, and the only car that can consistently compete with foreign machines. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. New style make and break spark. Simms-Bosch Magneto, Bevel gear drive. Very large and roomy full aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order.

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

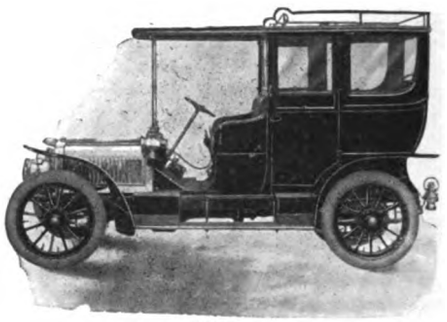
THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Boston Agents: MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.

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1906
Models
Type C

117″
Wheel
Base

WE GATHER from the good opinions expressed by many highly pleased owners of The Lozier Motor Car, that its "smooth running, ease of control and all-around reliability," covers about everything that is to be desired in a High-grade Motor Car. The item of low maintainance cost and all that it implies, was correctly calculated in its design, and is fully guaranteed in its perfect construction. Among the notably distinctive features that are embodied in

The Lozier Motor Car

may be mentioned—THE USE OF HESS-BRIGHT BALL BEARINGS in sliding gear, change speed and differential gears. WELDLESS NICKEL-STEEL FORGED I-BEAM AXLES of heavy construction. DROP FORGED STEERING KNUCKLE. BALL-BEARING WHEELS of large diameter (36 inches). PLATFORM SPRING SUSPENSION. SOLID FORGED MOTOR CRANK-SHAFT (arms being webbed out instead of drop-forged—turned, hardened and ground on its own centers). TRANSMISSION and differential shafts and flexible shaft with universal joint of *nickel-steel*. BABBITTED BRONZE MOTOR BEARINGS. LONG WHEEL-BASE, 117 inches.

1906 MODEL, TYPE C, 35 HORSEPOWER LIMOUSINES, LANDAULETS AND TOURING CARS now delivering. PRICES $4,500 TO $5,500.

THE LOZIER MOTOR COMPANY
1 BROADWAY, NEW YORK CITY
(Cars now showing at R. M. Stivers' Carriage Rooms, 19 W. 62d St. Before January 1st, at our New Building, 55th St. and Broadway.)

35
Horsepower

36″
Wheels

Seats
Seven
Passengers

Platform
Spring
Suspension



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POINTS ON PAINTING

Many Mixtures and Processes Necessary to Obtain Good Results—About Transparent Colors.

"In painting bodies, the first thing is the priming," says the master painter of a well known automobile and carriage factory in "The Carriage Monthly." "Be sure the surface is dry before another coat is added, which is usually half rough stuff and lead. This coat should stand for twenty-four hours, then bad places should be puttied up. Apply a coat of rough stuff the same day and a coat each succeeding day until filled. Do not let over twenty-four hours elapse between coats. Then let the work stand two or three days at least. After rubbing, let it dry out twenty-four hours before coating. After the body is thoroughly sandpapered and looked over for further puttying, it is well dusted. Dusting is often neglected. If the body is properly cleaned, dusted, colored and color varnished, there is very little left to be done.

"The next step is called 'preparation,' or surface coat. This is composed of lampblack and white lead. To this add two tablespoonfuls of oil, sufficient to coat the body in hand. This coat should stand until the next day, and should be gone over with sandpaper, lightly, not rubbed with curled hair, as this produces a glossy surface to which the second coat will not adhere as well as if it were sandpapered.

"For the second color, on the black parts add one and one-half tablespoonfuls of oil to sufficient black for one job. The black parts are ready for black japan or black varnish, the latter being preferred for various reasons. Two coats of black varnish are sufficient. Put on freely to produce a perfect surface for blue panels. On this second color, a body blue, which comes in three shades—light, medium and deep—covers better than anything, and is much more satisfactory than Prussian blue and white, which were universally used a few years ago. On this apply a coating of one-half body blue and ultramarine mixed, and with sufficient binding so that it will not dry flowery. This coat must be brushed on thin and even; if not, it will be shady or streaked.

"It is now ready for glazing with ultramarine blue, mixed with rubbing varnish; two coats, of equal strength, over the light blue. The glaze must be made weaker, or it will not turn out satisfactorily.

"For lake panel, first apply a coat of Indian red and black over the 'preparation' coat, getting the desired shade through this coat. Then apply a thin coat of Munich lake, sufficiently bound with rubbing varnish so as not to dry flowery. This coat, as the second coat of blue, must be brushed thin and level, and laid off as you go along.

"This, no doubt, will be a revelation to some oldtime painters who have always taken it for granted that transparent colors could not be successfully used in this way. If we give this two coats of Munich lake and glaze of equal strength, not rubbing the first coat but very little, we have a beautiful rich color, which can be rubbed and finished.

"For green panels, color and color varnish the panels before glazing, which can be either yellow lake or verdigris, according to the shade of green.

"To prepare a body for finishing, give it a light rub over, wash and dry sponge it. Then take a sponge with very little water in it, and rub a dozen drops of sweet oil, well worked into the sponge. Go over the entire body with this, rubbing dry as you go along, not allowing the oil to dry on the surface. Use old silk curtain for this purpose, which is thoroughly washed first, and it gives a surface that s easily dusted.

"On gears, when it is necessary to remove the paint, we burn off the wheels and woodwork and the carriage part instead of scraping, as it leaves the wood in much better shape, and it can be done more quickly. On the iron work, we use a paint remover which works satisfactorily. After the gear and wheels are properly cleaned and sandpapered, apply a coat of lead color. In mixing lead color, take dry lampblack and break it up with coachmakers' japan. Break up the white lead with turpentine and mix to the shade required; thin with turpentine before adding the oil. For the first coat, add three tablespoonsful of oil to sufficient lead to coat a coach gear. This should stand three or four days. As to putty—the less the better, in fact, if the job is properly burned off and cleaned up, there will be little need for putty. Sandpaper this coat and apply a second coat of lead, mixed with one tablespoonful of oil. Let this coat stand two days. It is very bad practice to have more time elapse between coats than here stated.

"The next step is to sandpaper for color. For black, blue, green, or dark lakes, use the same preparation for surface coat as on bodies without adding any oil. Thin with turpentine and use. Do not hair off this coat, simply dust it.

"For green gears, add one tablespoonful of oil. This will dry to be colored the same day. All dark coach greens should be colored and color varnished the same day, as they will adhere better and not chip. Use body blue on gear, adding two spoonsful of oil, and glaze with ultramarine the following day. A slow drying, rubbing varnish should always be used on gears. On lake gear, mix a preparation of Indian red and coach black, getting the desired shade. Gears should be always made somewhat lighter. Add two tablesponsful of oil, and, for the next coat, a thing coating of lake with about the same quantity of oil. It should be glazed the next day. One heavy coat of glaze or color vanish, on a gear that is properly brought up, is sufficient to make a good job.

"Silent as a ghost, powerful as a lion, trustworthy as time," are some of the recommendations urged upon the buying public of overseas by a foreign maker in favor of his six-cylinder model for next year.

HERE'S THE "TOBOGGAN"

Hails from Oshkosh and is for Winter Use, of Course—Has Spiked Driving Wheels.

The inventor who has "perfected" an automobile for winter use has made his annual appearance. Cold weather always brings him in its train, and it is somewhat to be wondered at that he has not been more numerous this year or put in an earlier appearance. This time the news comes from Oshkosh, Wis., and is in the shape of a report that a local firm has been at work for the last two months upon a motor vehicle mounted upon runners and adapted to run over snow of any depth, ice or the bare ground. Although the machine is in no way intended for summer use, it is made to run over the bare ground, to prevent being stranded.

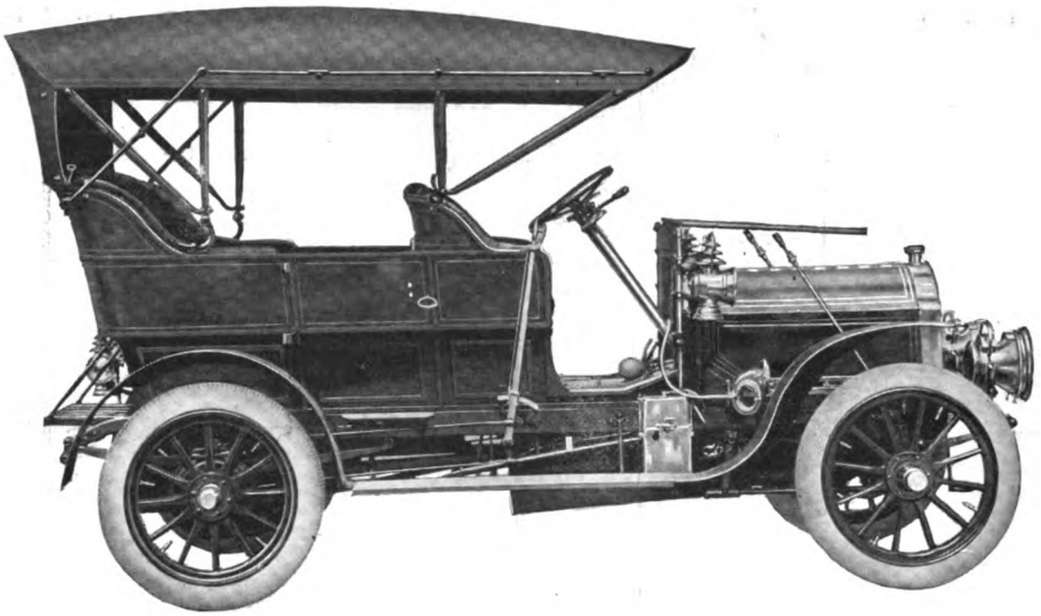
The machine closely resembles a very much elongated automobile body resting on runners. It measures thirteen feet in length from the tip of the forward runner to the spiked driving wheels in the rear. The runners are of the usual type and about the same width as employed on the ordinary cutter, but much lower. The object of employing such a long "wheel base" is to obtain sufficient underbody to form a "toboggan," or snow sliding surface, when the depth of the latter is sufficient to bear the vehicle. Power to drive the car is furnished by a 5-horsepower, 2-cylinder air cooled engine, weighing only 150 pounds and which operates at 1,700 r. p. m. But a single divided seat is provided, although there is plenty of room for another should it be found necessary.

It is really an "auto-toboggan," the latter being the most noticeable feature of the conconstruction. It begins at the bottom of the extreme rear of the body, and extends underneath right to the front, where it is finished off with the regulation curl front to finished off with the regulation curl front to shove aside the snow. This is further supplemented by a hood four feet in length housing the engine, gasolene tank—in fact, the motive power complete, the dashboard being of the customary type and carrying the regular fittings. The body only clears the ground by 14 inches, and may be adjusted to any lesser height.

Shield for Winter Protection.

Wonders never cease, and the latest and greater wonder of them all is the device of a a British motorist who has contrived a sort of cape top to keep his feet warm. This ingenious arrangement, which is a veritable misplaced buggy top, rises from the dash and completely envelops the driver's knees, covering the steering wheel and mechanism of control. When not in use it folds down against the dash, leaving a wind shield at the sides, which also serves to complicate the difficulty of mounting and dismounting from the driver's seat.

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This is the Pierce Great Arrow 28-32 H. P., with straight tonneau body, cape top and folding glass front. Price, without top, $4,000. Cape top, extra, $200.

PIERCE

The Pierce Arrow is an American car—the best American car that has been made—better in proportion to its cost than any imported French car—better for American use, American roads and the American motorist. It offers satisfaction, minimum of expense in running, perfect service, and can be operated by the owner.

Catalogue and descriptive literature on request.

THE GEORGE N. PIERCE COMPANY,

BUFFALO, N. Y.

Members Association of Licensed Automobile Manufacturers.

The Pierce Arrow exhibited in Madison Square Garden only.

PIERCE AGENTS FOR 1906.

Boston,	J. W. Maguire Co., 745 Boylston St.
Chicago,	H. Paulman & Co., 1321 Michigan Ave.
New York,	Harrolds Motor Car Co., Broadway, 58-59th Sts.
Pittsburg,	Banker Bros. Co., Baum and Beatty Sts.
Baltimore,	Southern Auto. Co., 2021 Maryland Ave.
Buffalo,	The George N. Pierce Co., 752 Main St. (Retail)
Detroit,	J. P. Schneider, 189 Jefferson Av.
Denver,	The George N. Pierce Co., 1643 California St.
Hartford, Conn.,	The Miner Garage Co., 120 Allyn St.
Houston, Tex.,	Hawkins Auto. & Gas Engine Co.
Kansas City, Mo.,	E. P. Moriarty & Co., 1612 Grand Ave.
Los Angeles,	Bush & Burge, Cor. 7th & Main Sts.
Louisville,	The Zorn-Strauss Co., Inc.
Milwaukee,	Hibbard Automobile Co.
Ottawa & Montreal,	Wilson & Co., 142 Bank Street.
Oakland, Cal.,	The George N. Pierce Co., 1013 Clay St. (Wholesale)
Philadelphia,	Foss-Hughes Motor Car Co., 201 N. Broad St.
Portland, Me.,	J. A. Dowling.
Providence, R. I.,	The Shepard Company.
Rochester,	U. S. Automobile Co., 21 Plymouth Ave.
San Francisco,	Mobile Carriage Co., Golden Gate Ave. & Gough St.
Saratoga Springs,	W. L. Hodges, 16 Woodlawn Av.
Scranton, Pa.,	Standard Motor Car Co.
Springfield, Mass.,	E. R. Clarke Auto. Co., 117 Lyman St.
Syracuse,	Amos-Pierce Auto Co., 109 S. State St.
St. Louis,	Western Auto. Co., 4701 Washington Blvd.
St. Paul,	C. P. Joy Auto. Co., 368 Minnesota St.
Toronto,	Auto & Supply Co., Ltd., 24 Temperance St.
Troy, N. Y.,	Troy Auto. Exchange, 22 4th St.
Utica, N. Y.,	Utica Motor Car Co.

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The Week's Patents.

806,434. Carburetter for Hydrocarbon Motors. George M. Schebler, Indianapolis, Ind. Filed October 30, 1903. Serial No. 179,161.

Claim.—1. A carburetter consisting of a main casing having an air passage therethrough with an induction opening and an eduction opening, an air inlet structure, a throttle valve structure and means for securing either of said structures to either the induction or eduction openings.

806,452. Driving Wheel for Motor Vehicles. Charles S. Bauld, Latrobe, Tasmania, Australia, assignor of one-half to Alfred Christian Dehle, Hobart, Tasmania, Australia. Filed May 3, 1905. Serial No. 258,597.

Claim.—The combination with a driving wheeel of a self-propelled vehicle, of a hollow hub fitted with cogs, on its inner surface, said cogs having smooth surfaces on either side thereof, a T-shaped frame, rollers at the ends of the horizontal arm of the T, a spindle carried at the end of the other arm, a pinion loosely mounted on said spindle, said pinion engaging with the cogs and having smooth enlarged portions at each end engaging with the surfaces, and toothed wheels mounted on the extended ends of pinion carried on the spindle.

806,512. Carburetter for Hydrocarbon Engines. Lawrence Abraham, New York, N. Y. Filed April 1, 1904. Serial No. 201,088.

Claim.—1. The combination of a carburetter, a connection for conducting the explosive mixture, including air, from such carburetter to the engine, a throttle valve in said connection, and a separate valved inlet for the admission of air only in said connection, between said throttle valve and the engine and means for automatically moving said air inlet valve as described.

806,520. Metallic Overshoe for Vehicle Wheels. Henry L. Canne, Dingman township, Pike county, Pa. Filed February 21, 1905. Serial No. 246,724.

Claim.—1. In a metallic overshoe for vehicle wheels, comprising an endless metallic belt formed of links interlocked transversely and longitudinally, an endless chain on one side of the belt, a sectional chain on the other side of the belt, oppositely disposed links connecting the side chains with the belt at intervals, hooks for connecting the sections of the side chain, and transverse straps for engaging the rim of the wheel and connecting the side chains with each other.

806,583. Starting Mechanism for Explosive Engines. George B. Selden, Jr., Rochester, N. Y. Filed November 18, 1904. Serial No. 233,334.

Claim.—1. In starting mechanism for explosive engines, the combination of a driving shaft, a starting crank loosely mounted thereon, a member movable relative to said shaft and adapted to remain stationary when the engine is running forward and to be driven when the engine is running backward, and a cam operable by said member for disengaging the starting crank from the driving shaft, substantially as described.

806,584. Wheel. George . Sheppard, Fillmore, Minn. Filed July 18, 1905. Serial No. 270,277.

Claim.—1. The combination with a wheel including a felly having circumferentially extending openings therein, of a casing including two sections disposed at opposite sides of the felly and extending oppositely therebeyond, attaching devices engaged in the sections and lying within the openings, said devices being arranged to permit of movement of the casing radially with respect to the wheel and circumferentially thereupon, means for holding the casing yieldably against circumferential movement in one direction, a cushion disposed between the sections outwardly of the wheel, jaws engaged between the sections upwardly of the cushion and extending therebeyond, a resilient tire engaged between the jaws, and fastening devices engaged in the sections and in the jaws.

806,592. Power Transmitting Device. Clarence W. Spicer, Plainfield, N. J. Filed November 5, 1904. Serial No. 231,502.

Claim.—1. In an incased universal-joint power-transmitting device, the combination with two universal joints connected to transmit power from one to the other, of a single casing inclosing both said joints and arranged to permit angular movement, with respect to each other, of the driving and driven members of the device, said driving and driven members provided with means substantially closing the ends of the casing.

806,610. Gas Engine. Joseph Williams, Jr., Pittsburg, Pa. Filed April 23, 1904. Serial No. 204,559.

Claim.—1. In a gas engine, the combination with a crank shaft, of oppositely-disposed series of cylinders, communicating mixture-ports connecting the opposite cylinders, pistons therein connected by an intervening framework, and a pitman provided with a crank-bearing and pivotally connected with the moving piston structure, substantially as set forth.

806,612. Steering Mechanism for Motor Vehicles. Herbert W. Alden, Hartford, Conn., assignor to Electric Vehicle Company, Jersey City, N. J., a corporation of New Jersey. Filed June 16, 1902. Serial No. 111,816.

Claim.—1. A steering mechanism for automobiles comprising a rotating shaft, a bearing for said shaft supporting it solely against axially longitudinal movement, a threaded or gear portion on said shaft, engaging threaded or gear portion co-operating therewith, the latter mounted in a two-armed lever, connections from said lever to the steering wheels whereby rotation of the shaft causes a deflection of the road wheels to steer the vehicle.

806,623. Resilient Tire. William F. Beasley, Plymouth, N. C. Filed February 20, 1903. Renewed May 11, 1905. Serial No. 259,957.

Claim.—1. A resilient core for a tire consisting of a plurality of sinuous bands of rubber, . apices of the several bands being staggered in respect to each other, substantially as described.

806,654. Wheel Tire. Louis S. Flatau, St. Louis, Mo. Filed March 11, 1905. Serial No. 249,542.

Claim—1. A wheel tire of the character described, comprising a tire member and alternating metal and elastic segments or sections forming the tread, the elastic segments normally projecting beyond said metal segments.

806,657. Resilient Wheel. Irma Guiot, Puyricard, France. Filed April 19, 1904. Serial No. 203,907.

Claim—1. In combination in a wheel having a rim, a second rim of larger diameter than the first and surrounding the same and a number of india rubber blocks placed between said rims so as to form springs, said blocks having parts of vulcanized india rubber or ebonite adapted to receive the rivets for securing the blocks to the rim, substantially as described.

806,664. Sparking Device for Explosive Engines. William B. Hayden, New York, N. Y. Filed January 9, 1905. Serial No. 240,262.

Claim—1. An electrical sparking device for explosive engines, consisting of a hollow plug provided with a fixed electrode, a rock-shaft extending laterally through said plug and projecting from one side thereof, a vibratory electrode fixed to said rock-shaft and co-operating with said fixed electrode, an armature fixed to said rock-shaft, a magnet co-operating with the armature, means carried by the plug and connected with the armature for retaining it normally away from the magnet and for normally retaining the two electrodes in contact and circuit forming means co-operating with the magnet and said fixed electrode.

806,684. Steering Mechanism for Self Propelled Vehicles. Herman Lemp, Lynn, Mass., assignor to General Electric Co., a Corporation of New York. Filed January 13, 1904. Serial No. 188,848.

Claim—1. In combination, a driving and a driven member, a mechanical power multiplying connection between the members, and a device independent of the connection for preventing the transmission of strains from the driven member to the driving member.

806,714. Exhaust Muffler. John M. Porter, Parkersburg, W. Va., assignor of one-eighth to John F. Laird, Parkersburg, W. Va. Filed March 30, 1905. Serial No. 252,842.

Claim—1. A muffler comprising a series of cells or cylinders arranged one within the other, each inside cylinder being of a smaller diameter and of a shorter length, substantially as described.

806,715. Silencer for Internal Explosion Engines. Nathan W. H. Sharpe, London, England. Filed March 29, 1905. Serial No. 252,777.

Claim—1. In a silencer for internal combustion engines, the combination of parallel concentric tubes provided with openings located near their opposite ends, respectively, and an inlet tube entering the inner tube substantially parallel therewith and provided with a number of openings, and means located between said first named tubes for separating the discharge into small streams, substantially as described.

806,760. Injecting and Mixing Device for Hydrocarbon Motors. Andre S. F. van de Putte, St. Petersburg, Russia. Filed August 19, 1905. Serial No. 274,960.

Claim—1. In a hydrocarbon motor, the combination with an air inlet, of an injecting tube extending to the centre of said air inlet, a conical bottom in said air inlet and having its point in the proximity of the end of said injecting tube, a plurality of leading channels along the periphery of said bottom, an inlet valve box adjoining to said bottom, a turbine wheel below said bottom and adapted to be acted upon by the air sucked in through the leading channels in said bottom, and a spring pressed inlet valve in said inlet valve box.

806,782. Magnetic Clutch. George A. Damon, Chicago, Ill., assignor to The Arnold Magnetic Clutch Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Feb. 21, 1903. Renewed Dec. 7, 1903. Serial No. 184,229.

Claim.—1. In a magnetic clutch, the combination with co-acting members, of a yielding support for at least one of said members arranged to permit other than a right line movement of one of said members in ap-

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proaching the other member, substantially as described.

806,798. Trussed Frame for Automobiles. Benjamin A. Gramm, Chillicothe, Ohio. Filed July 28, 1905. Serial No. 271,653.

Claim.—1. In an automobile frame, the combination of a beam; a hanger depending therefrom; a pair of tie rods extending from the ends of said beam to said hanger, and a pair of strut rods connecting said hanger with the axle members, and said axle members.

806,799. Elastic Hub for Wheels. Edouard Grardel, Amiens, France. Filed April 26, 1905. Serial No. 257,455.

Claim.—1. A resilient hub for wheels comprising an axle box, a sleeve to which the spokes are secured, a bag or envelope interposed between the sleeve and box, and a plurality of inflated cushions filling said bag.

806,830. Mixer and Vaporizer for Hydrocarbon Engines. James W. Packard, Warren, Ohio, assignor to Packard Motor Car Company, Warren, Ohio, a Corporation of West Virginia. Filed June 29, 1903. Serial No. 163,590.

Claim.—1. In a hydrocarbon engine, a mixer and vaporizer comprising a gasolene inlet, a casing surrounding said inlet, an air valve, adapted to be operated by suction, arranged about the gasolene inlet within said casing, a second air valve arranged outside of said casing, and means for manually operating said second air valve, said air valves being arranged to control independent supplies of air to the mixing chamber.

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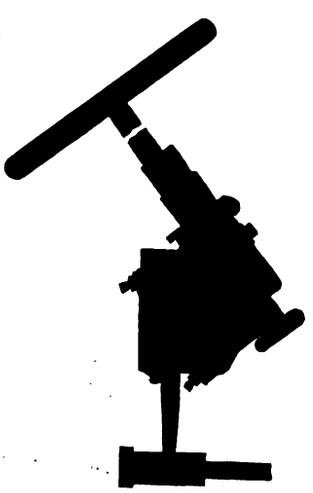
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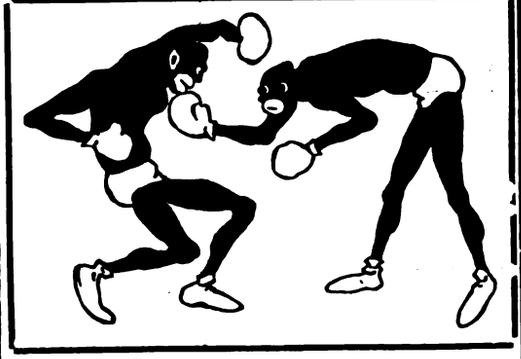
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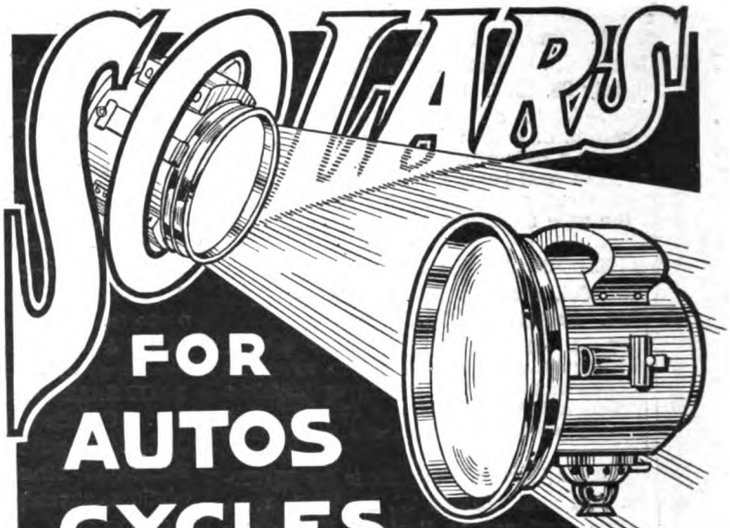
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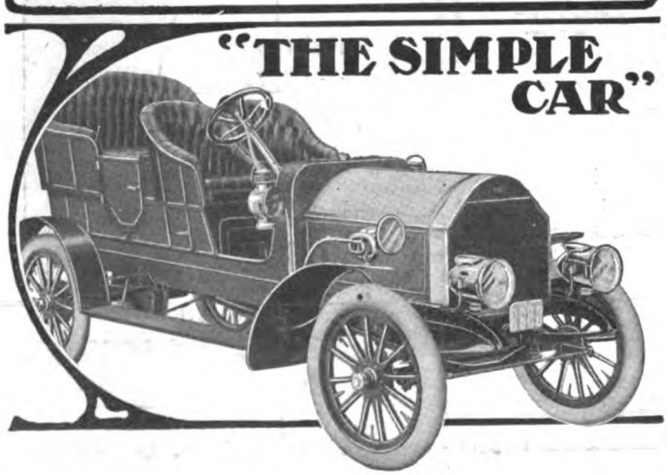
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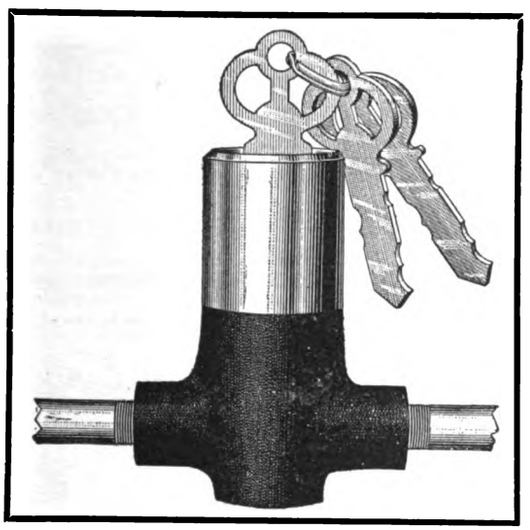
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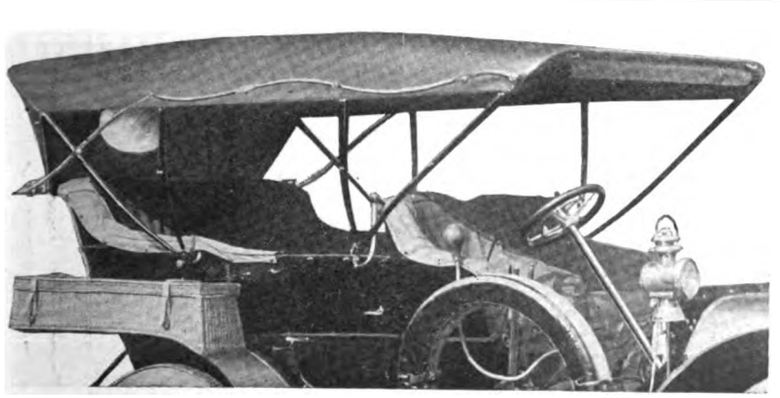
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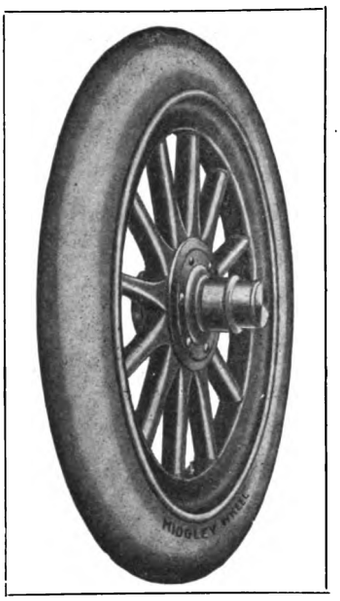
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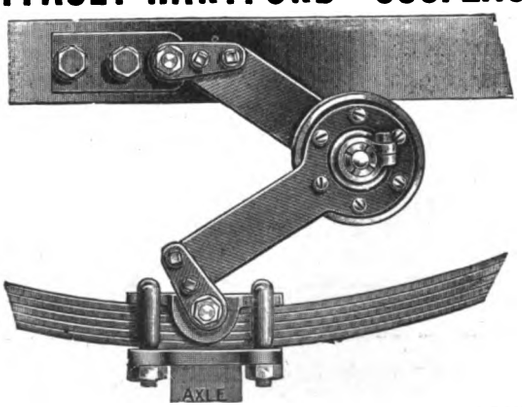
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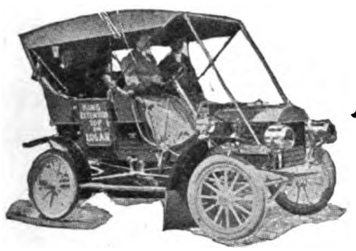
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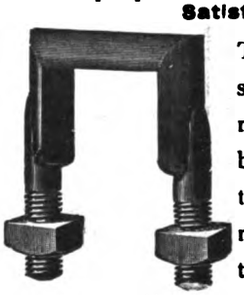


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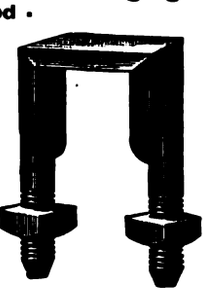
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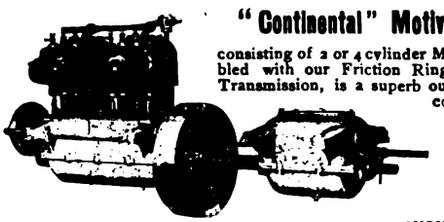
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consisting of 2 or 4 cylinder Motor, (10 to 40 H. P.) assembled with our Friction Ring Clutch, and Shaft Drive Transmission, is a superb outfit for your car. Sold in combination or separately.



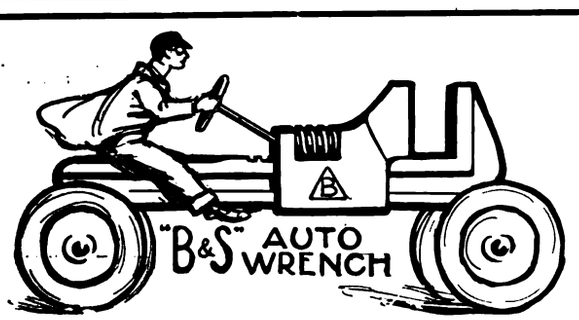
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LIGHT WEIGHT
HIGHEST EFFICIENCY
RIGHT PRICE
AVOID INFERIOR IMITATIONS

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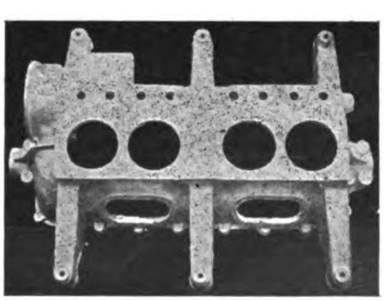
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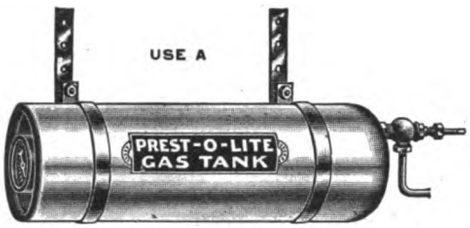
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That Car **Logan** of Quality

We know something of especial interest to dealers and users. Write us, and we will tell you

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The Grout Gasoline Car

for 1906.

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ALUMINUM BODIES.
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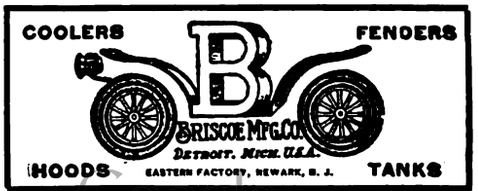
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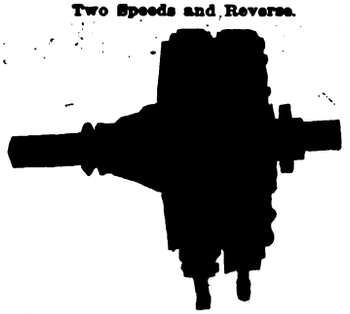
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INDIVIDUAL CLUTCH.
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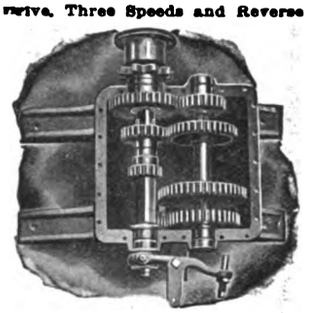
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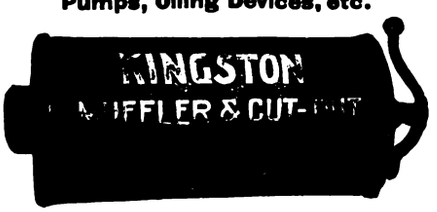
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An instrument that will enable you to determine the grade per cent. you are ascending or descending.

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SPECIAL AUTO PARTS
We make parts from your own design from either brass or aluminum
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OUR CHAINS OUTWEAR ALL OTHERS
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Solves the Ignition Problem
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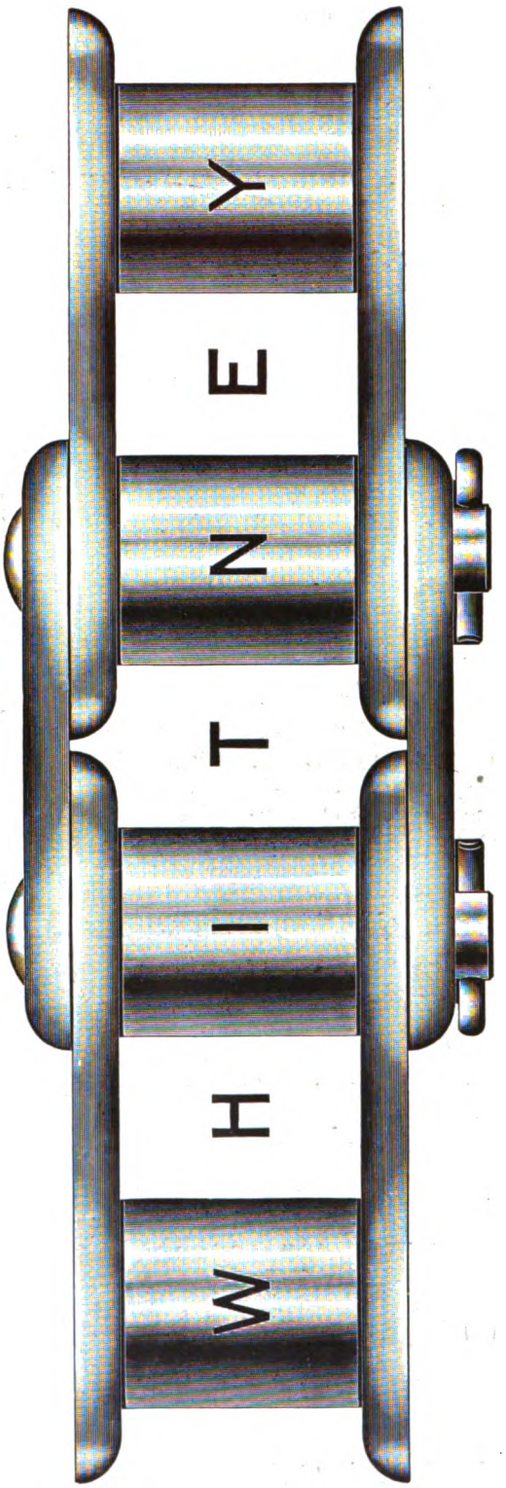
See 1906 Model "WHITNEY" CHAINS at the Automobile Shows.

Thousands of Chains have been damaged by interferences and unfavorable conditions.

In the future we hope for Sprockets better than the average of the past.

Send for our new Catalog and see instructions about lubrication and care of a chain.

In designing your car select the chain you consider right and leave plenty of space for a wider and larger chain.



DETACHABLE TYPE—PATENTED.

Are your Sprockets cut to the correct bottom diameter with cutters correct in form?

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Have the sharp corners of your sprocket teeth been removed after cutting?

Are your sprockets in line?

As a manufacturer do you inspect every sprocket by comparing it with a correct model or do you accept anything so long as it has the right number of teeth?

THE WHITNEY MFG. CO., Hartford, Conn.

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WE most heartily extend to our patrons and friends everywhere our sincere best wishes for a Holiday Season of surpassing Good Cheer.

We are not unmindful of the good-will that has been so generously manifested on the part of our patrons during the past year; and for this, and for the constantly increasing liberality of their patronage, we are deeply grateful.

We pledge you that an earnest effort will be made to merit a continuance of your valued confidence.

Morgan & Wright
Chicago

YOU MUST SEE

THE NEW FOUR-CYLINDER

TWO-CYCLE ELMORE

To be exhibited in NEW YORK at MADISON SQUARE GARDEN only.

When you have examined this practical constructed TWO-CYCLE four-cylinder car you will readily understand why it produces more power than any similar sized motor of the four-cycle type; why actually fifty per cent. of the moving parts are done away with; and why the cost of up-keep is reduced fifty per cent. A careful examination of the two-cycle Elmore will convince you that it is the most economical car in the whole world. We have the positive proof of this in facts and figures from hundreds of users.

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Besides these superior points think what it means to cut out one, two or three cylinders at will; to do entirely away with all inlet and exhaust valves, with their attendant complicated mechanism; to eliminate from 16 to 20 parts on every cylinder; to secure a steady unbroken application of power; to throttle down on the high speed to two miles an hour or fly along at the rate of 45 miles; to climb steep, difficult grades without strain or effort, holding at a high rate of hill speed.

The wonderful improvements and mechanical advantages of the 1906 Two-Cycle Elmore are covered fully in detail in our new catalogue and special literature. Write for them at once, for it certainly is worth your while to learn all you can about the most economical and sensational car of the moment.

ELMORE MFG. CO., 1104 Amanda St., Clyde, Ohio

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OF

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We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who are licensed to manufacture or sell under the G & J Patents:

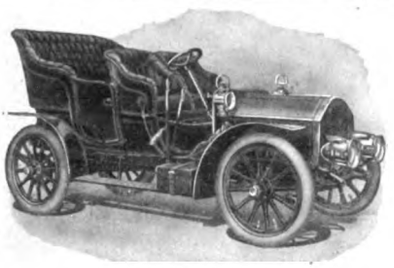
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Waltham Orient



Waltham-Orient Model R, $2,250.
The Keystone of the Air-cooled Arch.

The Car of To-day Must do More than Look its Price. The high priced, high powered motor car is all right—it has its place and its purchasers but the popular demand is for a car of moderate price, reasonable speed that will be maintained up-hill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it and you have a right to expect it.

It is because it combines all of these important and necessary features that

The Waltham-Orient is the Leading American Car of its Price.

FIVE TOURING MODELS FOR 1906.

Model R, a Swell Special 20 H. P.....	$2,250
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Friction Drive Buckboard Model BB, $400.
The Lowest Priced Motor Car Made in the World.

A Greyhound can run a mile as rapidly as a five thousand dollar Racehorse, and he can course through the sand and up the cliffs where the thoroughbred cannot follow; which only goes to prove that price, bulk, weight and power rating do not necessarily mean the first to finish nor the one to get nearest the top of the mountain.

The Buckboard is the Greyhound of Motor Cars.

It makes no pretensions to being the thoroughbred horse, it has no five thousand dollar price tag on it, but is simply in a class of its own, equally a pleasure to its owner for it serves its purpose and serves it well.

WHY?

BECAUSE: It creates interest quicker than any car you can represent. It conflicts with no other sales It makes Motorists out of Horsemen and Cyclists. It sells to owners of the "thoroughbreds" for daily service to the station, the country club or the seashore, It sells for Rural Mail Routes, Telephone and Telegraph Linesmen, Parcel Delivery, etc. It requires less time and trouble for each sale, and less subsequent expense and repairs. It has an operating cost less than one-third of any other motor car in the world. It will run 35 miles to the gallon of gasoline, and 100 miles to the pint of oil. It has a maximum power ratio of 40 to 1. No other car exceeds 18 to 1. It will climb 40 per cent. official grade and run 30 miles or more per hour. If you will write us we will send you forty other reasons.

We are alive for live agents. Write for specifications and agency proposition.
We will exhibit only at the New York, Chicago and Boston Shows.

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Waltham Manufacturing Company, GENERAL OFFICES AND FACTORY, WALTHAM, MASS., U. S. A.

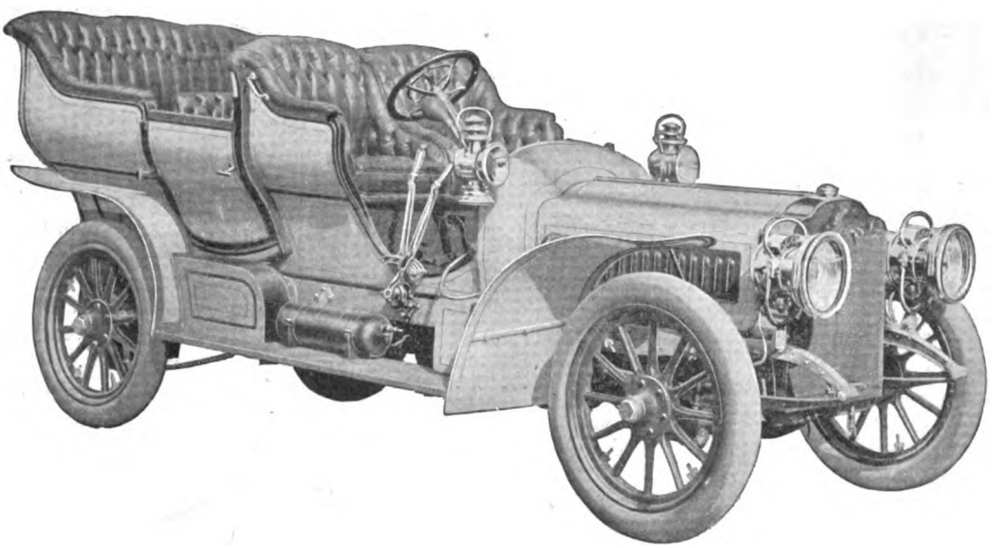
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NO—SIXTY MILES AN HOUR IS NOT NECESSARY—

But it's a Satisfaction to know that you can attain that speed if you wish in the 50 H. P.

THOMAS



Why do we emphasize the fact that every stock Thomas is guaranteed to show sixty miles an hour before leaving the factory? Not because that is its chief claim upon your consideration. Not because the average owner cares to travel at any such speed. But because the extraordinary efficiency of the Thomas in that respect is merely an indication of its absolute perfection in every other respect.

We believe 50 H. P. to be necessary to the highest degree of smoothness, easy riding and comfort in taking steep grades or rough roads, and picking up speed quickly without changing gear on crowded streets. That is what the Thomas furnishes—full 50 Horse Power.

The Thomas does not merely court comparison with the best American Car—it invites competition for all-around efficiency under any and all conditions with the best cars made anywhere in the world.

The sixty-miles-an-hour guarantee as we have said is merely incidental to its perfection in every other point.

We would suggest that your investigation be made as early as possible. Even the increased capacity of this great factory will not entirely meet this year's phenomenal demands.

THE E. R. THOMAS MOTOR CO.,

1416 Niagara Street, **BUFFALO, N. Y.**

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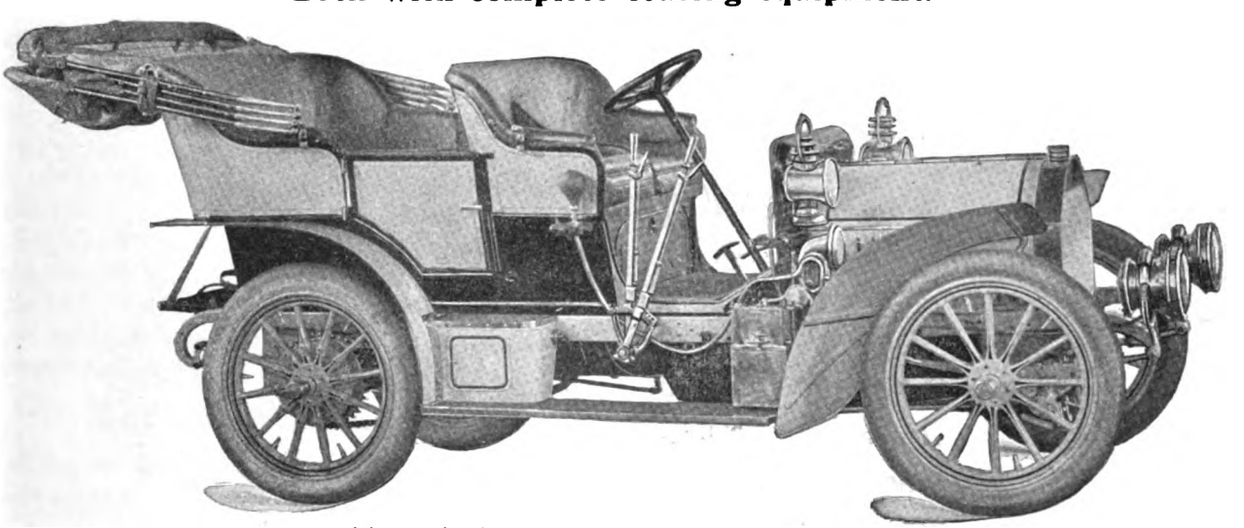
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. 30-35 H. P., $5,000,

Both with complete touring equipment.



TYPE E. 15-20 H. P. $3000.

Top and Luggage Carrier extra.

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; extra wide doors; fitted with top irons; color and striping optional.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action
IGNITION, make-and-break.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.
CONTROL, spark and gas levers on steering wheel.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5 to 7; fitted with top irons; extra wide doors; color and striping optional.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.
CONTROL, spark and gas levers on steering wheel.

The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 249 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
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QUEEN
AUTOMOBILES
FOR 1906

3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P.

Price, $2,000.

SPECIFICATIONS

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4;
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

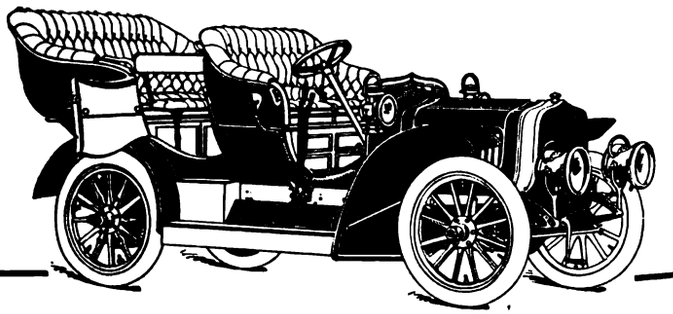
We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

C. H. BLOMSTROM MOTOR CO

DETROIT, MICH.

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POPE-TOLEDO

Type XII.

35-40 H. P. Price, $3,500.

This car is absolutely the **fastest** and most **powerful** touring car ever built. Think of a **stock** car with regular gearing doing 76 miles an hour. Isn't this convincing that the power the **POPE-TOLEDO** motor developes is transmitted to the wheels? **Type XII** will carry seven people at 30 miles an hour, and its noiseless, smooth running engine will be scarcely more exerted than when idling.

Car has 54 pounds of total weight per horse-power, only 10 8-10 pounds engine weight per horse-power. Note this significant fact.

THE WHEEL BASE IS ONLY 104 INCHES.

Yet the car seats comfortably seven people, with room to spare.

DOUBLE DIRECT OUTSIDE CHAIN DRIVE,

of course; and a **transmission** made of specially treated steel of 225,000 pounds, tensile strength, the strongest, most efficient, sweetest running transmission ever constructed.

Send for catalogue of

20-25 H. P.	Double Side Entrance.	Price,	$2,800.
30-35 H. P.	Front Entrance.	"	3,200.
35-40 H. P.	Double Side Entrance.	"	3,500.
50-60 H. P.	Double Side Entrance.	"	6,000.

ORDER NOW FOR EARLY DELIVERY.

Be Sure The Name POPE Is On Your Automobile.

POPE MOTOR CAR CO.,

TOLEDO, OHIO.

NEW YORK CITY, N. Y., 1733 Broadway.
BOSTON, MASS., 223 Columbus Ave.
WASHINGTON, D. C., 819-14th St.
A. L. A. M.

Indianapolis Dunlop Tire



Open Steam Cured Fitted with Flap Wide Edges

This tire is fitted with a flap, which protects the air tube from screw heads in the rim and from moisture, and does away with the necessity of fabric-covered tubes. The special edges and the flap constrict against the channel of the rim in such a way as to prevent creeping. It is entirely open steam cured, which gives the tire exceptional strength.

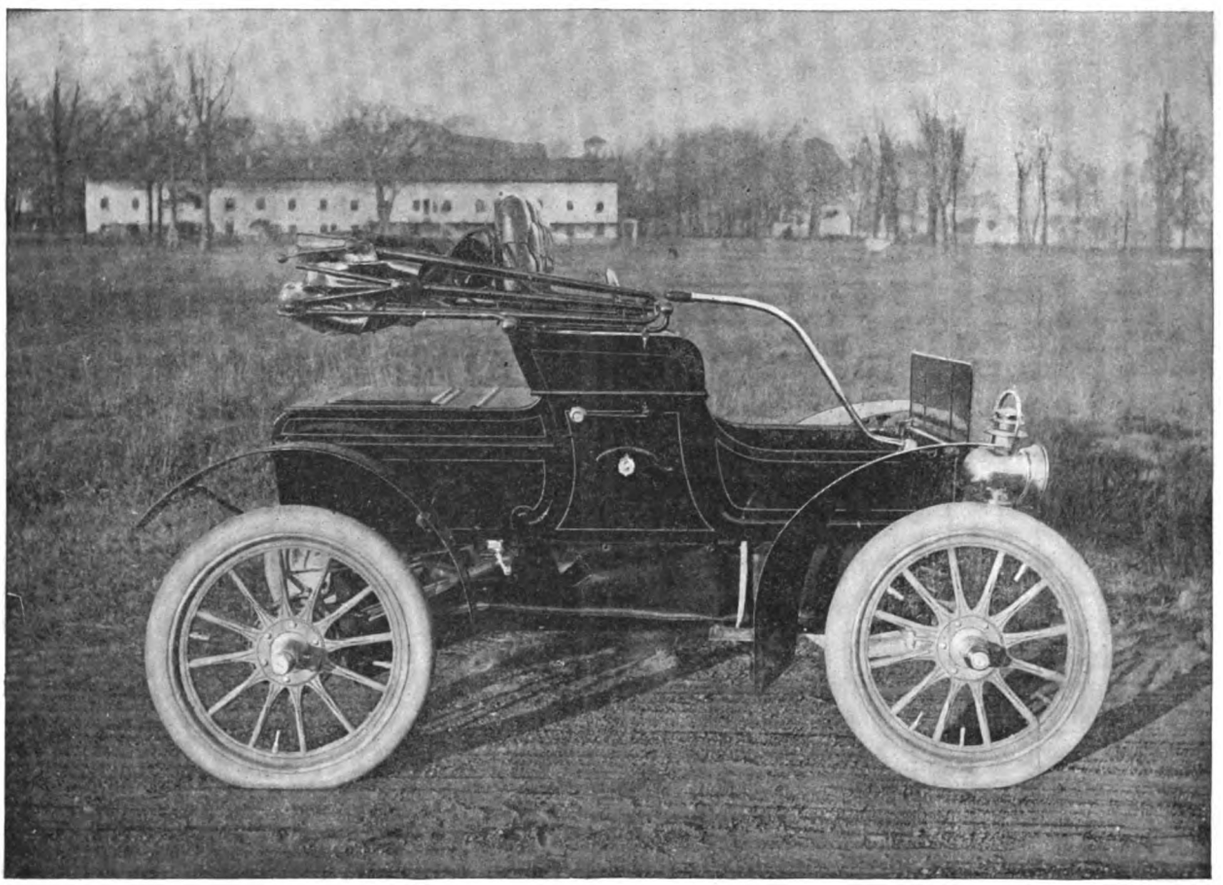
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429 Wabash Ave.	**1528 Court Place**
Detroit	**Minneapolis**
247 Jefferson Ave.	**21 South Second St.**
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Cleveland	**Los Angeles**
337 Huron St.	**1038 South Main St.**

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OLDSMOBILE



Standard Runabout, Model "B" Price, $650.

For 1906 we have brought out, in addition to our well known curved dash runabout (the "you see them wherever you go" kind), a straight dash or "piano box" runabout, which we sell at the same price. This style appeals strongly to a certain class of drivers. It is unique and attractive and possesses all the most desirable features essential to a satisfaction-giving runabout.

It has a simple single cylinder motor, with 7 h. p. It is lever controlled. Starts from the seat; has safety device to prevent all danger of back fire; effective and easily operated brakes, and many attractive and serviceable features, making it up-to-date and desirable in every way—a big value for the money, and essentially a car for business utility.

Use the Catalog Coupon below for further particulars regarding the Standard Runabout, Model "B," price $650; the Palace Touring Car, four-cylinder, Model "S," price $2,250; two-cycle Model "L," price $1,250, or any of our commercial vehicles.

OLDS MOTOR WORKS, - - - - Lansing, Mich., U. S. A.

Member A. L. A. M.

Our New Models will be on Exhibition at the Madison Square Garden Automobile Show, Jan. 13 to 27.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K4 Model L.... Traffic Cars....

Name .....

Address .....

.....

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name .....

Address .....

.....

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K4

Name .....

Address .....

.....

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Diamond

SIDE WIRE SOLID TIRES

For Trucks and Commercial Vehicles. Conceded to be the Best Motor Truck Tire in the market today.

The Rubber is strictly Our Own Stock. It has never been duplicated and Frequent Attempts at imitations have but emphasized Diamond Superiority.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.
DETROIT—158 Jefferson Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—323 Huron St.
SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

Northern

TO BE EXHIBITED AT MADISON SQUARE GARDEN, NEW YORK, JAN. 13 TO 20, AND AT CHICAGO IN FEBRUARY.

Better than ever. Motor enlarged affording 20 h.p. and with wheel base increased to 106 inches, and longer and heavier full elliptic springs it will fully sustain its reputation of being the quietest and easiest running car in the world.

Other Notable Improvements: Brake pedal fitted with ratchet and pawl; pressed steel brake drums on rear wheels, with external contracting brake bands lined with Camel's hair belting 3 inches wide, affording an exceptionally large and efficient braking surface Bodies ironed for tops. Improved catches on side entrance doors.

Write for catalogue and full information about

1906 MODELS:

7 h. p. Sturdy Northern Runabout with lamp equipment, ... $650
20 h. p. two Cylinder Car with gas and oil lamp equipment, ... $1800
20 h. p. Limousine, ... $2800
Model "K" 30 h. p. four Cylinder Car with gas and oil lamp equipment, ... $3000



Silent Northern Touring Car. Double Side Entrance, Four-inch Tires. Gas and Oil Equipment.

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

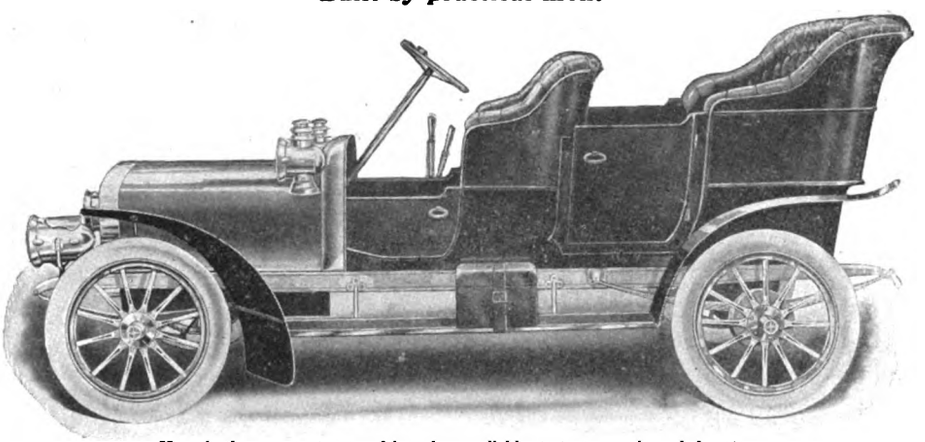
Members Association of Licensed Automobile Manufacturers.

New York City Agent: PETER FOGARTY, 142 West 38th Street.

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Aerocar

The Car of today, tomorrow and the years to come.
—Built by practical men.—



Here is the **one** motor car driven by a reliable, test-proven air-cooled motor.

The vital factor in every car is the motor.

All Automobile authorities – people who have had most experience—concede that many improvements are necessary in water cooled motors—too many mechanical complications, too much weight, too many troubles.

The same authorities agree that in the reliable, success-proven air-cooled motor lies the solution of most all motor car troubles.

The **Aerocar** has such an air-cooled motor. It has taken eight years of continual efforts, experimenting, testing, proving and many thousands of dollars to produce this reliable air-cooled motor, but the results sought have been secured, and they are well worth all the time, labor and money expended.

The air-cooled motor of the **Aerocar** is of wonderful efficiency in power. Runs with the uniform smoothness and rythm of an electric dynamo—under all climatic conditions, over all sorts of roads. Has strength of construction with simplicity of control, giving great durability of service, develops continuous higher power for weight, and gives greater speed than any other motor.

In the necessary, the vital qualities for satisfactory service, the air-cooled motor of the **Aerocar** is supreme—in a class by itself—the motor that "motes" when you want it to serve you.

The body of the **Aerocar** compares most favorably with any car either foreign or American. It embodies the best features of each, is graceful in line, is luxuriously roomy and comfortable; is finished and upholstered strictly up-to-date.

Aerocar 1906. 24 h.p. Four cylinders. Five passengers. 45 miles an hour. 104-inch wheel base. Shaft drive. Sliding gear transmission. Three speeds and reverse. Leather-faced cone clutch. Hollow steel dash. Four sight lubricator on dash. Tool box on running board. 34 x 4 tires. 9-inch road clearance, Weight 2,000 pounds. Fully equipped, ready for the road, including two large gas headlights, $2800 f. o. b. Detroit.

Will be exhibited and demonstrated at the Automobile shows in New York and Chicago.

The dealer who has the selling agency for the **Aerocar** will have a gold mine. Territory being rapidly taken up. If interested write us promptly.

The Aerocar Company, Detroit, Michigan

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National

RELIABILITY

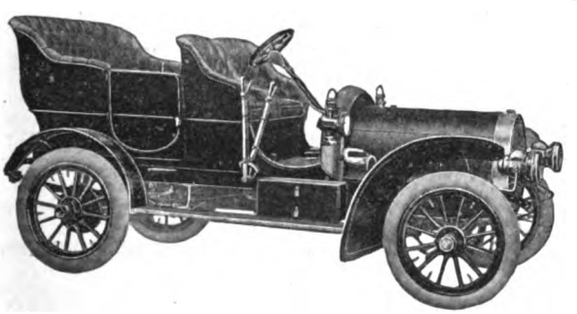
was demonstrated in the most convincing manner at Indianapolis, on November 16th-17th, 1905, when a **National Stock Car** made 1094 3-16 miles in 24 hours, breaking the World's Record by **78 9-16 Miles.**

At the NEW YORK SHOW 69th Regiment Armory Jan. 13th to 20th

WATCH FOR THE ROUND RADIATOR

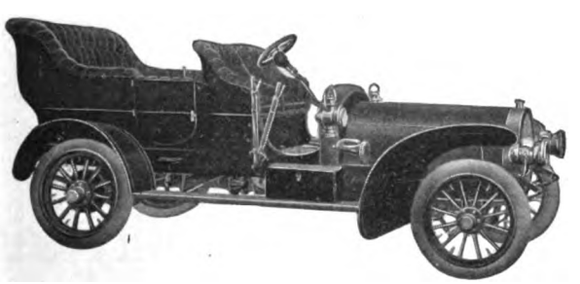
At the CHICAGO SHOW Coliseum Spaces 77-78-79 Feb. 3d to 10th

AND



National Model D, 4 cyl., 35-40 H. P. Price $3,000.

THE CAR THAT BROKE THE WORLD'S RECORDS



National Model E, 6 cyl., 50-60 H. P. Price $4,000.

AN INNOVATION IN TOURING CARS

Stylish, powerful, smooth runnnig, easily controlled. Aluminum body, seats seven passengers comfortably, ***all facing forward.***

WRITE FOR PARTICULARS

NATIONAL MOTOR VEHICLE COMPANY

1007 E. 22d STREET, - INDIANAPOLIS, IND.

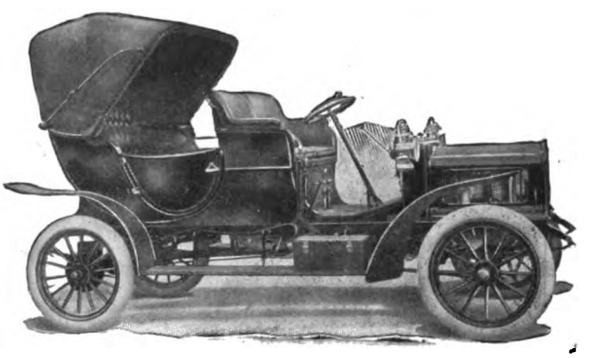
DISTRIBUTORS

Linscott Motor Co.....163 Columbus Ave., Boston, Mass.
Homan & Schulz Co.....88th St. & Broadway, New York, N. Y.
Ralph Temple Auto Co.....311 Mich. Ave., Chicago, Ill.
Liberty Auto Co.....138 Beatty St., Pittsburg, Pa.
Tioga Auto Co.....Broad and Tioga Sts., Philadelphia, Pa.
Colonial Auto Co.....3944 Olive St., St. Louis, Mo.
The Fisher Auto Co.....330 N. Illinois St., Indianapolis, Ind.

Member American Motor Car Manufacturers' Association, Chicago.

The Incomparable WHITE

The Car for Service.



THE REASON WHY

People often inquire, "Why is it that the longest tours, the hardest tours, the pioneer tours, the most interesting tours are made in White steamers?" The answer is simple: because our standing has always been to design a car for extraordinary road conditions. That is why White cars go ahead where other cars, designed only for ordinary road conditions, turn back. Another reason is that steam power, as utilized in the White car, possesses certain inherent advantages which cannot be realized through the use of other motive powers, no matter how highly developed the mechanism may be.

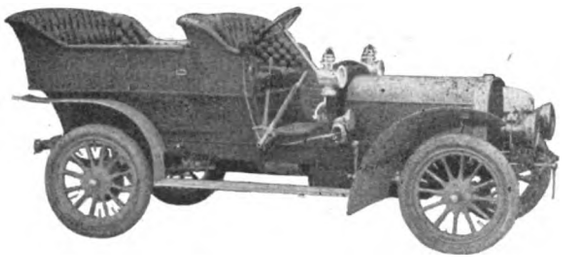
That readable publication, the White bulletin, describes graphically some of the more notable tours of recent years, with maps and other data of interest to all tourists. If you have not seen the last three or four issues, it would be worth your while to send us a postal asking for them.

We will exhibit at the Armory show in New York.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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Model R--Four-Cylinder Touring Car.

HAYNES

Vertical roller-bearing engines. Cylinders cast separately, 5¼x6 inches, 50 H. P. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master Clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller-bearings throughout. 108-inch wheel base, 54-inch tonneau, seating five people. Four to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, $3,500, f. o. b. Kokomo. Full equipment.

If an automobile weighing 2,750 pounds, plus the weight of five passengers, is dropped over a sheer embankment of seven feet, the machinery will receive a shock of just the same severity as if suddenly checked by shifting from high speed gear at thirty miles per hour to middle speed gear at fifteen miles per hour. In the latter case the engine must act as a brake, and the entire machine is severely strained. With the Haynes transmission this cannot occur. A rachet and pawl device permit the car to coast until the speed of the car and engine are relatively equal, when the pawl and the engine take up the load. While making the change in speed from high to middle or from high to low the gears are running idle, permitting the operator to shift with perfect ease and without danger of burring or stripping the gears. With all forms of transmission except the Haynes, the shock of sudden change of gears may be, and frequently is, thrown upon the machine, a thing impossible in the Haynes car, and one of the reasons why Haynes cars are so long lived and cost so little for repairs and up-keep.

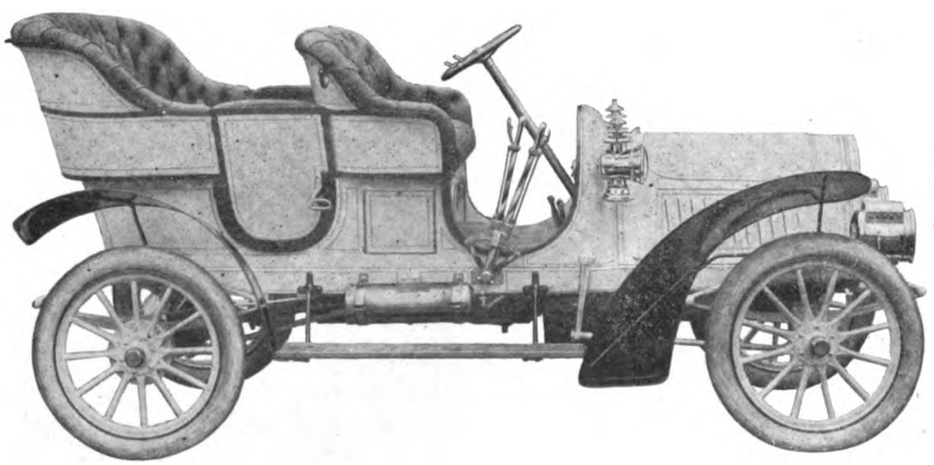
This is but one of the exclusive features of the Haynes. Others are its Roller-Bearing Engines, Master Clutch, Universal Joints that do away with wear on pins, Driving Sprocket and Roller Pinion, etc. There is perfect harmony throughout its entire mechanism, which makes its cost of operation, up-keep and maintenance extremely low.

It is perfectly finished in all respects. Only the best of tested materials are used. Body is of cast aluminum and wood, designed by a leading Parisian body maker. Hand-buffed leather and gray curled hair are used in upholstering. Other exclusive features are given in our new catalogue. For prompt attention address Desk 29.

"The Car the Repairman Seldom Sees."

HAYNES AUTOMOBILE COMPANY, Kokomo, Indiana

CHICAGO, 1421 Michigan Ave. **Member A. L. A. M.** **NEW YORK, 1715 Broadway**



Premier

"The Quality Car"

(AIR COOLED)

Conspicuous in Automobile Construction, by virtue of its beautiful design, great power, speed, ease of carriage, simplicity of manipulation and accessibility. It embraces a 20-24 H. P. four cylinder vertical motor, 4¼ x 4¼ in. bore and stroke, bevel gear shaft, drive, three speeds forward and reverse Premier sliding gear transmission (mounted on five Hess-Bright type ball bearings), pressed steel frame, I beam front axle, 32 in. wheels, 4 in. Clincher tires, 106" wheel base, beautiful cast aluminum curved dash, sight feed precision oiler, cast aluminum hood front and fan, luxurious upholstering, rear seat 40 in. (measure the other cars), irreversible steering gear. Full gas and oil lamp equipment and generator, horn and BRAKES THAT HOLD—altogether comprising a car which has no superior in point of merit and luxury.

Price, $2,000 F.O.B. Indianapolis. **Model L, De Luxe, $2,250.**

Write for catalogue and booklet (S) of Road Experiences.

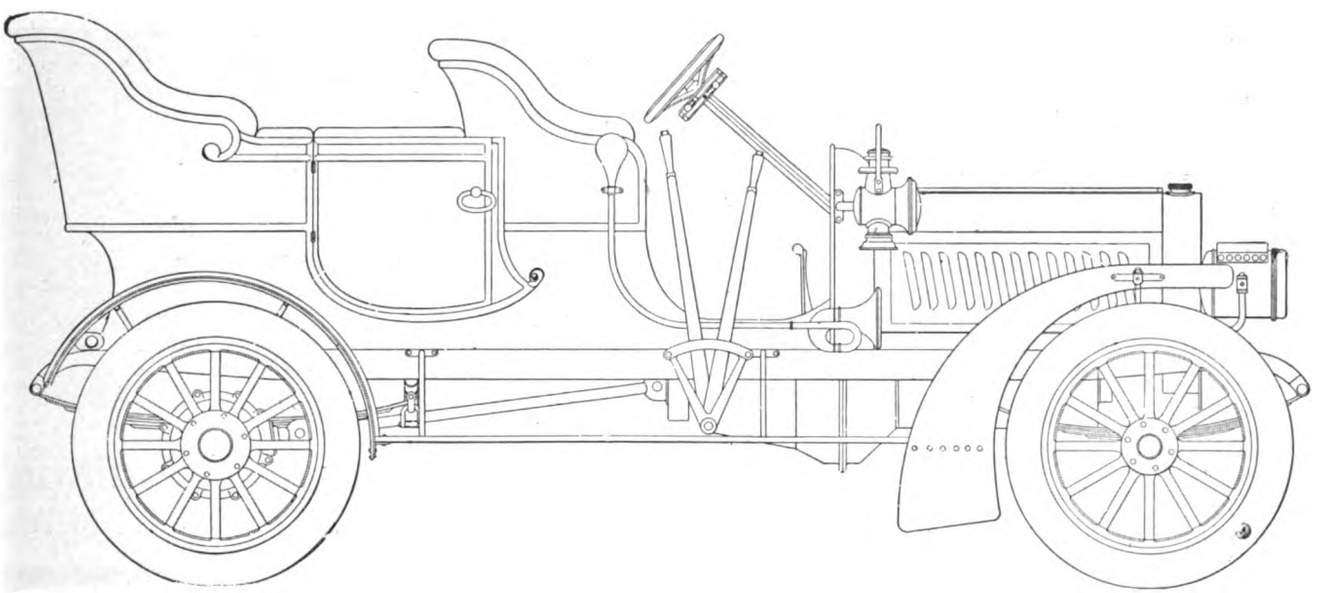
PREMIER MOTOR MFG. CO., - - Indianapolis, Ind.

Members American Motor Car Manufacturers Association.

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1906—ST. LOUIS—1906

"RIGS THAT RUN"



TYPE XVI

32-36 ACTUAL H. P.—$2500.

Our 1906 Type XVI is the crowning triumph of fifteen years experience in building gasoline automobiles. This model represents EVERYTHING GOOD in modern automobile construction. You cannot afford to pay more, and you couldn't expect to pay less. Compare Type XVI with any other car listing from $3,000 to $5,000, and we doubt if you will find any vast difference in other than the price. An agent should sell a car that will instantly appeal to all classes. Thousands of prospective purchasers are in the market, a few of them will insist on paying $5,000 and over—a few more will insist on $2,000 and under, but eight out of every ten will be the BETWEEN class, if they can get the satisfaction at a reasonable price. Type XVI is between the two extremes (in price), but from closest observation, we fail to see where it will not compare inch for inch with any car built in AMERICA. A FAIR, UNPREJUDICED COMPARISON IS ALL WE ASK. It will carry five people comfortably at any speed from four to fifty miles an hour, absolutely noiseless, no vibration, will negotiate 22 per cent grade on high speed. General finish, upholstering and trimmings cannot be surpassed—no matter what the price.

MOTOR. Four cylinder vertical, under hood, water cooled, developing 32-36 ACTUAL H. P. Entire construction highest grade. Muffler reduces noise to nothing. (Quietest car in existence.)

VALVES. All are mechanically operated, generous bearings Cramps special bronze throughout. Large fan behind radiator.

CRANK CASE. Made of special metal. Instantly accessible aluminum side plates allow instant inspection of connecting rod, crank shaft, etc. Full metal pan under engine.

FRAME. Specially prepared pressed steel, channel section. 4¾ inch tapered and reinforced. Motor and transmission integral assuring perfect alignment under all conditions.

TRANSMISSION. Sliding type, three speeds and reverse, all gears made of special high carbon steel. All shifts made withone lever. Clutch metal to metal, multiple disc, load is taken up gradually. No matter how sudden the shift is made the jerk is ABSENT.

CONTROL. New style rack and pinion, with ball and socket joints to take up all wear. Spark and throttle control placed conveniently under steering wheel, also accelerator foot pedal to use if desired for QUICK SPEEDCHANGES.

BRAKE. Three in number—any one of which will hold car on any grade. Same are controlled by both foot and lever at side of car. Application of foot brake throws out clutch, disconnecting transmission from motor.

AXELS. Front extra heavy dropped forged I beam, guaranteed not to spring. Rear axle of the floating type all equipped with Timken roller bearings throughout.

DRIVE. Bevel gear regular ratio three to one. We will furnish lower gearing upon request.

SPRINGS. Large half eleptic of the best quality obtainable. Front 38 inch, rear 48 inch. Three point suspension throughout, allowing perfect riding over the worst road conditions.

Our cars contain many individual features of merit, which we have omitted to mention. Our new elaborate catalogue explains every detail and will be mailed upon request. Fifteen years building experience has taught us the proper kind of material to use and how to use them correctly. We have simply covered the broad points of general construction that you may compare Type XVI with other makes costing nearly twice as much. Some cars may COST MORE—but none are better. We have not sacrificed one iota to cheapen our product. The material throughout is GOOD OLD ST. LOUIS quality from the ground up. Our name is on it and our guarantee back of it.

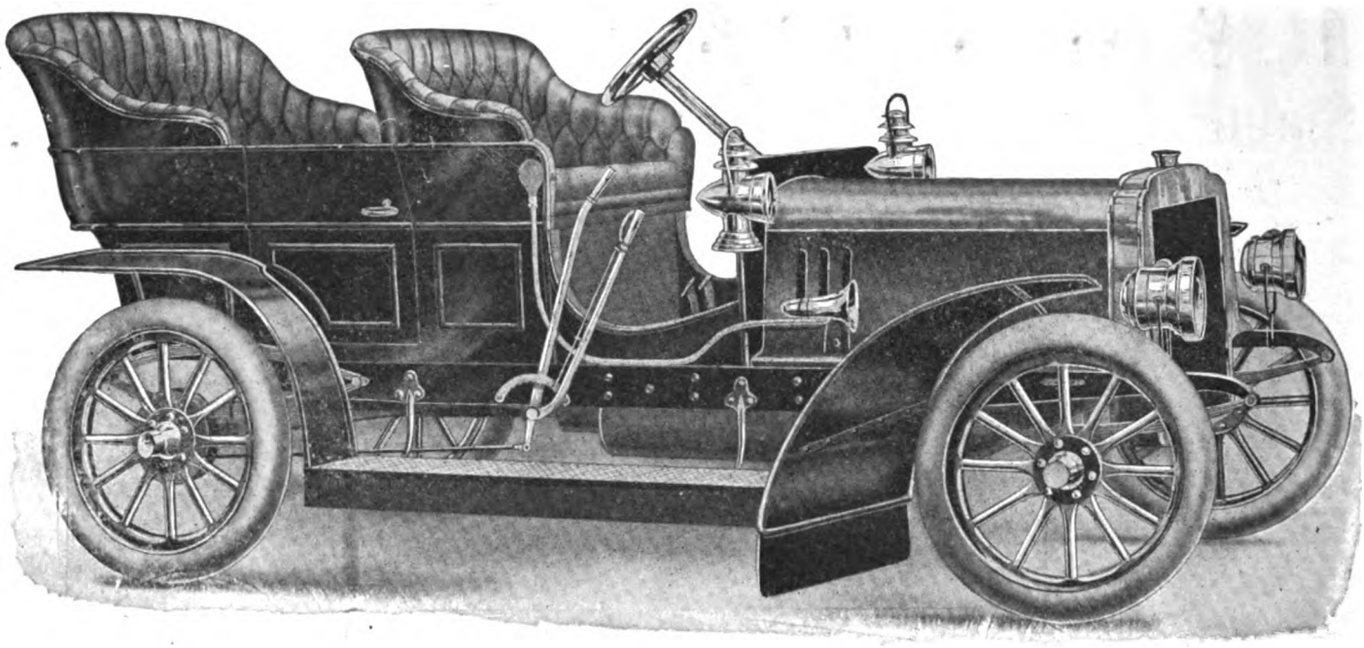
LASTLY. We are fast closing all available territory and our agency list will be closed solid before the New York show. If we are not already represented in your immediate vicinity, you had better write for printed matter AT ONCE. Don't wait until show time and be among the "ALSO RANS". Our agency proposition is most entertaining—it MIGHT pay you to investigate.

ST. LOUIS MOTOR CAR COMPANY, - Peoria, Ill.

SALES OFFICES: 1229-31 Michigan Ave,, Chicago, Ill.

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The Six-Cylinder Ford.



"Always a year or two ahead." When the single-cylinder car was "it" Henry Ford produced a double cylinder opposed motor, more powerful and at a lower price.

When the Automobile trade finally awakened to the possibilities of the two-cylinder opposed motor Mr. Ford produced a four-cylinder car at $2,000 that was in a class by itself, the public having been taught to believe that such a car could only be produced at a fabulous price.

And now, having exhausted the possibilities of the four-cylinder car in a touring car class, he has introduced it into the Runabout class, and in addition offers a six-cylinder car that is proportionately as far in advance of all competition as his first double opposed motor.

This is a wonderful car.

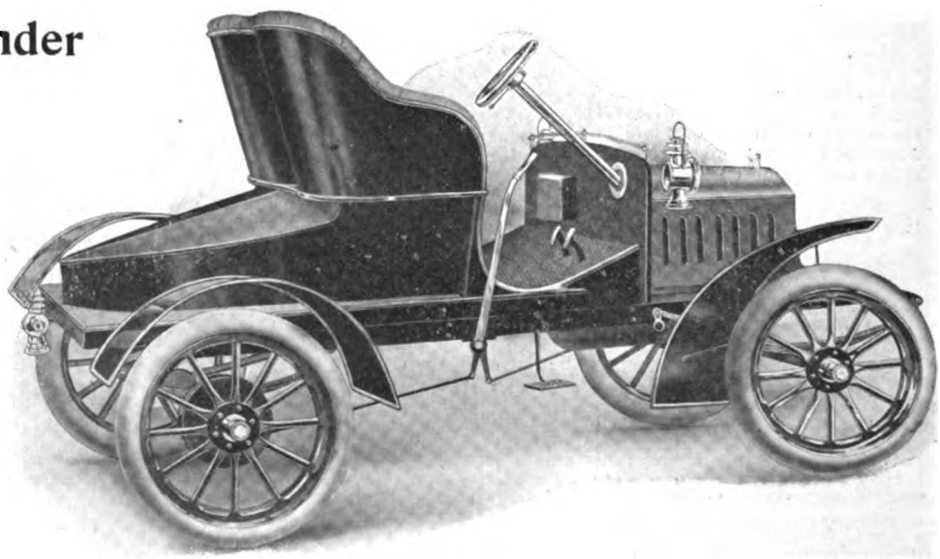
First, its six cylinders, with 40 horsepower, give a latitude of speed never before accomplished in a car of its class and weight, 2,000 pounds. From four miles per hour on a high gear up to fifty miles.

While one cylinder of this car will develop sufficient power to drive it along an ordinary asphalt pavement, the whole six cylinders inspire the driver with the confidence that there is an enormous latent energy in his motor, ready for any new demand without overloading the motor, making it the easiest controlled and most flexible automobile motor ever built.

When you have seen this motor in operation you will fully appreciate that we have the smoothest running automobile motor in the world.

Price, $2,500.00.

The Ford Four-Cylinder Runabout.



It is a fact that thousands of these cars are in course of construction.

Like all Ford cars, this one is a radical departure from previous and popularly accepted designs, and there is a reason behind every radical idea.

Henry Ford built a four-cylinder engine for his Runabout with fewer parts than the old-fashioned single-cylinder engine had, and the Ford Motor Co. have an enormous factory that does nothing but build motors for this Runabout, with a capacity of 100 complete engines every day.

The whole thing is very simple when you go about it right.

This is why we can build the Ford four-cylinder Runabout for less than $500.00.

We are making 40,000 cylinders,
10,000 engines,
40,000 wheels,
20,000 axles,
10,000 bodies,
10,000 of every part that goes into the car. Think of it! Such quantities were never heard of before. We buy 40,000 spark plugs—10,000 spark coils—40,000 tires—ALL EXACTLY ALIKE.

The first Runabout (Model A) we built cost $30,000—yet we sold duplicates of that model for $750.00.

It is the quantity that counts.

FORD MOTOR COMPANY, Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

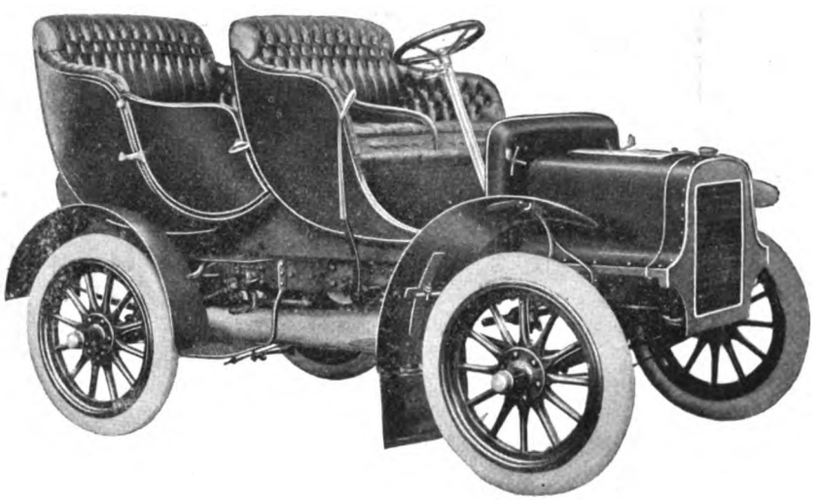
BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City.

Canadian Trade supplied by Ford Motor Co of Canada, Ltd., Walkerville, Ont

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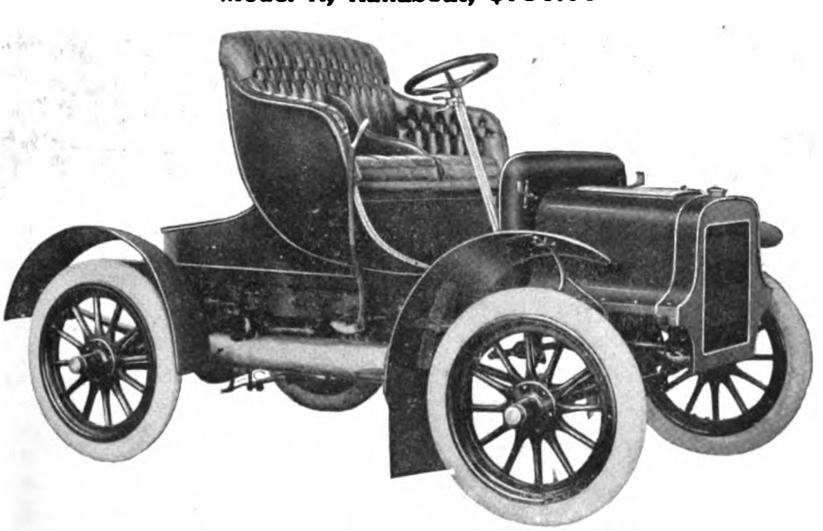
1906 Single Cylinder CADILLACS

Model M, Light Touring Car, $950.00



Motor, single cylinder, four cycle 5-inch by 5-inch. Ten H. P. Water Cooled. Copper water jacket. Mechanical pump feed lubricator. Jump spark ignition. Planetary transmission, two speeds forward and reverse. Pressed steel frame, channel pattern. Brake on extra large differential drums. Chain drive. Three spring suspension, rocker joint on front spring, more than doubling spring efficiency. Wheel base, 76 inches. Tires, 30x3½ on Model M; 28x3 on Model K. Bodies, Victoria pattern, strikingly beautiful. Pressed steel hollow dash. Finish, purple lake (a deep, rich wine color) on body panels and doors, with light carmine striping; dark carmine running gear. All parts thoroughly interchangeable. Cadillac quality throughout, offering values never before equalled.

Model K, Runabout, $750.00



Our four cylinder line consists of Model H, 30 H. P. Touring Car, at $2,500. Runabout at $2,400 and Coupe at $3,000. Also Model L, 40 H. P. Touring Car, at $3,750, and Limousine at $5,000. These will be announced in detail later and exhibited at New York at Madison Square only; also at the Chicago Show.

CADILLAC MOTOR CAR COMPANY, Detroit, Mich.

Membe s of Association Licensed Automobi e Manufacturers.

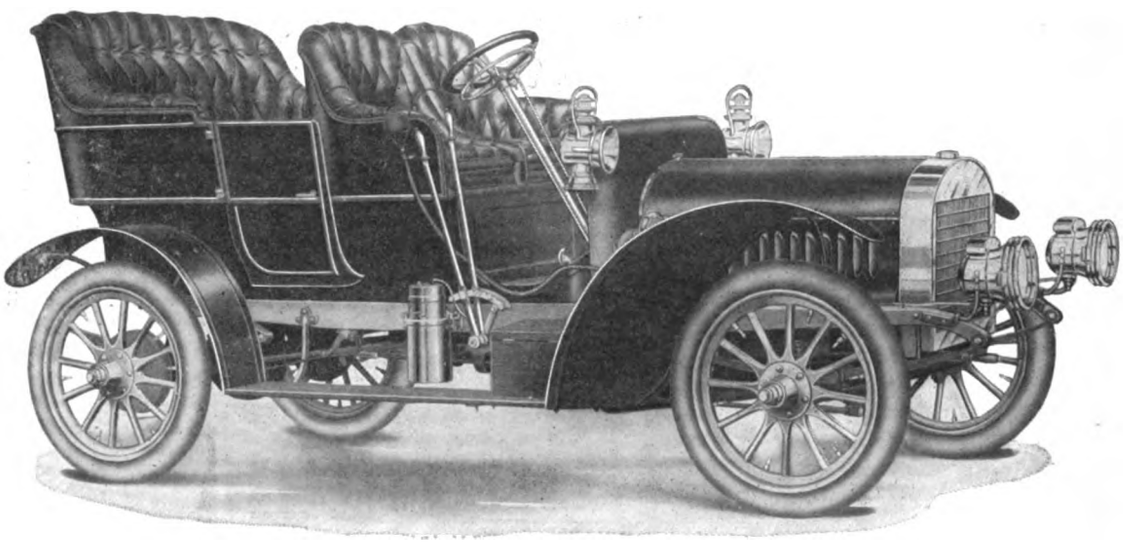
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This is the

Rambler

Model 14,

$1750.



Its qualities are too many to enumerate here and if the outside looks good to you, our catalogue and the Rambler Magazine giving full details of this and six other models are at your service.

Thos. B. Jeffery & Co.

Main Office and Factory - - - - Kenosha, Wis., U. S. A.

Branches

Boston, 145 Columbus Ave.
Philadelphia, 242 N. Broad Street.
San Francisco, 10th and Market Streets.
Chicago, 302-304 Wabash Ave.
Milwaukee, 457-459 Broadway.
New York Agency, 134 W. 38th St.

BRANCHES IN ALL LEADING CITIES.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, December 28, 1905. No. 14

WANTED NO JURY TRIAL

Manhattan Storage Co. Does Not Fight Carr's Charge of Fraud and is Mulcted.

Apparently the Manhattan Storage Company believes in "Big Bill" Devery's admonition, "When you're caught wit' the goods on you, say nuthin'." As an answer to the complaint of George W. Carr, of New York, in an action brought to rescind the purchase of a "Columbia Elberon Electric Victoria," which was, in fact, a runabout, and to recover the purchase price of $300 with interest from August 18 last, they merely interposed a general denial to each and every count charging them with having made grossly fraudulent misrepresentations as to the character of the vehicle.

Like the Southern "gemmen" apprehended for invading hen roosts, they "denies de allegation and defies de alligator." As a result, Judge Moore rendered a decision without opinion in favor of the plaintiff for $329.50 on Tuesday last.

In his complaint Mr. Carr states that instead of being one year old, as wararnted, the batteries had seen three years' service; the car was of the vintage of 1903 instead of 1904; it was not even the type represented; the tires would not stay inflated for more than a few hours, and the defendants made no attempt whatever to fulfill their promise of putting the vehicle in presentable condition so far as appearances went, nor of sending a man to repair it. To none of these accusations did they find it expedient to be explicit in answering, in spite of the fact that a general denial under such circumstances is equivalent to letting judgment go by default. Nor did they wish to run the risk of a trial before a jury—a matter of right if they cared to demand it. In other words, they are apparently willing to write off to the account of profit and loss the amount it costs to defend the occasional suit of the man who does not care whether his friends know he has been "stung" or not.

Miller Locates in Detroit.

Charles E. Miller has located his new Detroit branch at 227½-229 Jefferson avenue—in the heart of that busy automobile centre.

"Borrowers" of a Good Name Enjoined.

The Columbia Dry Battery Co. and the Vim Co., both of Chicago, will have to find some name other than "Columbia" for the dry cells they have been making and selling. Although that name as applied to dry batteries long has been trademarked and used by the National Carbon Co., Cleveland, Ohio, the Chicagoans nevertheless "borrowed" it. The National Carbon Co. did not relish it, of course, and as a result Judge Kohlsaat, in Chicago, has granted an injunction forbidding the use of the name Columbia Dry Battery Co. or the title "Columbia" on any save the National Carbon Co.'s cells.

Accessions to Credit Association.

Since its organization on November 29 last, the Automobile Trade Credit Association has added the following to its membership: Brown-Lipe Gear Co., Penn. Rubber Co., Trade Advertising & Pub. Co., Automobile Supply Co., National Carbon Co., R. E. Dietz & Co., Hartford Suspension Co., Continental Caoutchouc Co. and A. H. Funke. The association has, incidentally, waived its initiation fee of $10 until February 1 next.

To Make Tires in Shelbyville.

According to a dispatch from Shelbyville, Ind., the recently incorporated Shelby Rubber Company, of that place, will erect a large factory for the purpose of manufacturing a new automobile tire. When it begins operations the concern will, the message adds, employ one hundred men and fifty women.

Changes Name and Doubles Capital.

The St. Louis Motor Carriage Company, which recently moved from St. Louis, Mo., to Peoria, Ill., has been re-incorporated under laws of the State of Illinois, the name of the reorganized company being the St. Louis Motor Car Company. The capital stock of $50,000 has been doubled, and is fully paid up.

Fisk Men Shifted About.

Three managers of Fisk Rubber Co. branches exchanged places last week. F. C. Vanderhof went from Buffalo to Cleveland, Morris Penrose from Cleveland to Philadelphia and M. Hoffman from Philadelphia to Buffalo.

OWNERS ARE UP IN ARMS

Rich New Yorkers Seek to Establish Co-operative Garage—Their Plans and Complaints.

If two hundred New Yorkers who possess automobiles will subscribe $1,000 each before February 21 next, the Motor-Car Owners' Garage Co. will be brought into being. The movement is well under way, and under auspices so different from those usually concerned with co-operative enterprises that it must command most respectful heed, and as it is in the nature of a protest against the methods that prevail in the New York trade, it is of uncommon significance.

The directing head of the movement is M. R. Speiman, of H. W. Poor & Co., the Wall street bankers. Associated with him are Mr. Poor himself and such well known and wealthy men as Atwood Violett, W. H. Wheeler, Henry Low, W. H. Chesebrough and A. S. Gorham. These are the names signed to the prospectus of the proposed company, which bears date December 21, and which is as follows:

In the interest of owners of automobiles and as a co-operative measure for their benefit, it is proposed to form a company to erect a garage to house their motor cars and to accommodate those of others, the building to be owned in fee by the company and its operations to be conducted in the interest of the owners of the cars.

Many of the public garages in this city in which automobiles are stored are operated in the interest of some manufacturer, and often to avail of opportunities for selling new cars and appurtenances and for making repairs often unnecessary and expensive, instead of giving proper attention to the care of cars intrusted to them. The result is the neglect of the real interests of the car owners.

Under the plan proposed and under the system of management contemplated, many advantages would be secured, among which are the following:

1. Elimination of exactions and unnecessary charges for repairs, new material, etc., which are often incurred without the knowledge or approval of the owner.

2. A reduction of expenses for supplies and repairs by maintaining in the garage a skilled mechanical department.

3. An improvement in the condition of the cars by securing more intelligent and continuous supervision of them.

4. The prevention of the use of the cars without the owners' knowledge, by a proper tally upon each car.

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To accomplish these results it is proposed to organize a company, to be known as the Motor-Car Owners' Garage Company, with a paid-up capital of two hundred and fifty thousand dollars ($250,000), divided into two hundred and fifty shares of one thousand dollars ($1,000) each.

An eligible and convenient site is to be acquired, to be owned by the company in fee, within the boundaries of Thirtieth street, Ninth avenue, Sixtieth street and Fifth avenue.

On such a site a fireproof building is to be erected, of sufficient size to store 250 cars, and to contain a modern-equipped repair shop, supply rooms, waiting, smoking and bath rooms for patrons and chauffeurs.

The affairs of the company are to be managed by a board of five directors, who will adopt such regulations, establish a system, and maintain a discipline that will avoid many of the defects of the present methods of the public garages.

It is proposed to store and repair cars of other car owners than those who may be stockholders of the company, if deemed advisable, and to charge for such service the regular rates of the public garages.

Careful investigation, by a member of the committee, of the legitimate expenses and receipts of some of the public garages leads to the belief that the proposed company will be able to give its members and patrons the best possible service at the lowest reasonable cost, and in addition pay substantial dividends upon its capital.

The undersigned will act as a committee of organization to represent subscribers until such time as a company is fully organized and a final board of directors constituted.

The company will be organized without any commissions, promotion profits, or expenses whatever, except the necessary disbursements for legal services, printing, postage and petties.

Messrs. H. W. Poor & Co., 33 Wall street, will act as bankers for the committee, free of charge, and will receive subscriptions offered by means of the blank form opposite.

It is understood that subscriptions will not be binding unless $200,000 of the full amount of the proposed capital of $250,000 is subscribed within sixty days from this date.

When asked by a Motor World man for more specific instances of the abuses and lapses existing in the present garages, Mr. Spelman merely repeated those that have been a matter of general comment during late years.

Mr. Spelman stated that there is no dissatisfaction with the charge for storage and care, but there is dissatisfaction with the manner of care. Cars that are supposed to be cleaned, he maintains, are too often not clean. There is no very great complaint regarding repair charges, but Mr. Spelman and his associates think there are so many of them as to furnish grounds for grave suspicion. He did not hesitate to voice the oft-whispered charge that many of the repairs are "manufactured" in the garages themselves—that is, that cars are purposely deranged by some one in order that repairs may be effected and bills rendered. Finally, Mr. Spelman made plain that the "chauffeur problem" has a deal to do with the movement he is engineering. The chauffeurs and garage employes are too often hand in glove in their bedevilment, as he proved to his own satisfaction. Convinced that his car was being used without his knowledge, he played detective, with the result of discovering that the car was returned to the garage at 4 o'clock A. M. Further inquiry proved that the watchman and chauffeur had conspired at this sort of thing for several months.

The burden of Mr. Spelman's complaint is that in the existing garages there is a lack of competent inspection or supervision, a lack of trustworthy systems and checks and workmen, and a grievous lack of discipline.

TWO-CYCLE PATENT BOBS UP

Proves so Strong That the Startled Elmore People Purchase it—Assert That Others Must Now "See" Them.

That there exists a patent on the two-cycle form of motor will prove startling news to every one concerned with motors. It was as big a surprise to the Elmore Manufacturing Company as it will be to others, and they have been building two-cycle engines since they first took up automobiles—and now things are "coming their way" and the interest in that form of motor is increasing with the days. It was not until about a month ago that knowledge of the existence of such a patent was literally brought home to them. It "arrived" when a certain Joseph Day, of Rumford, England, who walked into the Elmore office at Clyde, Ohio, calmly announced himself as the owner of a United States patent fully covering the two-cycle system.

Very naturally his statement was received with incredulity, for the Becker brothers and their engine designers had carefully evolved, step by step, an engine that they firmly believed to be original. Careful comparisons of their plans with those shown in the patent, however, soon convinced them that they had, unconsciously, started in the trail blazed by Mr. Day, and, acting on the same idea, had much perfected and improved upon his engine. And yet the motor was, essentially, the legitimate child of Mr. Day's brain. There was no denying that he had a legal, unbreakable claim to the basic essentials upon which the Beckers had builded.

And then the Messrs. Becker acted with true American promptness. Were the American rights for sale? They were, and Mr. Day was perfectly willing that the men who had made the two-cycle engine the most talked about factor in the automobile world should take over the American rights.

So there is where the two-cycle engine proposition stands, and will stand for something like a year, when the Day patent expires. Other makers may manufacture that sort of engine if they wish, but the Elmore people say that it will be necessary for them all to "see" them first.

The Fading of Carey's Dream.

The Carey automobile "factory," of Fairmount, Ind., is said to be in financial straits, from which there is small hope of its recovery. The entire factory force, consisting of William Carey, owner, manager, secretary and sole workman, was busy during the three months of the factory's existence on the construction of one automobile, the only order received by the factory. The undoing of the institution was due to an untimely interference of the Westerfield Motor Company, of Anderson, Ind., in demanding payment for a gas engine, which the company bought from them and for which they allege it never paid. It is also said that the company bought many other pieces of machinery and considerable material for the manufacture of the automobile. Carey is said to have paid for none of them. Carey left Fairmount some time ago. A few weeks ago his wife shut up the shop and followed him. The automobile, which had reached a state of partial completion and could be run at a low rate of speed by one who understood its character and peculiarities, was left at the shop. It will probably be partitioned among the creditors.

Kaestner Finally Goes Under.

A receiver finally has been appointed for the Charles Kaestner Mfg. Co., of South Bend, Ind., on petition of the St. Joseph Loan & Trust Co., of that city, which claims the automobile manufacturing concern is indebted to it in the sum of $13,000. The trust company asks that the plant and property of the company be sold to go towards payment of its claim. The Kaestner Mfg. Co. moved from Chicago to South Bend about two years ago, but had not enjoyed a very roseate existence. Several months ago a receiver was applied for, but the company claimed the action to be mere spite work on the part of a creditor.

To Build Cars in Newburgh.

According to advices from Newburgh, N. Y., that city is to have a real automobile factory, General Manager E. R. Burroughs, of the Abendroth & Root Mfg. Co., having given out that that concern will begin the building of cars. The output for the present will be confined to one type—a 30 horsepower touring car. It is added that the first batch of six cars, all of which have been spoken for by local parties, will be ready for delivery March 1.

Denies Debt, Claims Damage.

In its answer to the litigation instituted against it by Alfred O. Dunk, Robert C. Yates and others, the Detroit Auto Vehicle Company denies the allegation of not paying the debts of the absorbed Detroit Novelty Machine Company, and says that it has paid more than $7,000. Instead of acknowledging indebtedness to the complainants it says that its damage amounts to $20,000.

Toronto Will Try Again.

Toronto will make another try at holding an automobile show early in 1906, and with last year's fiasco in mind, its promoters are determined to carry the project through this time. The "first Canadian Automobile Show," as it is styled, is scheduled for the first week in April. No place has as yet been selected to house the exhibits.

Torbensen Buys a Plant.

The Torbensen Motor Car Company, of Bloomfield, N. J., has purchased the property at 610 Bloomfield avenue. After alterations are completed, the company will occupy the building in the manufacture of motors and gears.

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The Week's Incorporations.

Delaware, Ohio—Cook Motor Co. increases capital stock from $15,000 to $25,000.

Lansing, Mich.—Northway Motor & Mfg. Mo., increases capital stock from $30,000 to $50,000.

St. Louis, Mo.—Van Automobile Company increases capital stock from $2,000 to $10,000, increase paid; assets, $43,076.60; liabilities, $1,953.63.

Chicago, Ill.—Branstetter Motor Co., under Illinois laws, with $2,500 capital; garage. Corporators—H. P. Branstetter, H. H. Look and O. M. Schultz.

Detroit, Mich.—Gray Motor Co., under Michigan laws, with $12,000 capital. Corporators—David Gray, Paul R. Gray and Luman W. Goodenough.

New York City, N. Y.—Commercial Motor Car Co., under New York laws, with $10,000 capital. Corporators—P. S. Russell, J. Ingle, jr., and M. E. Cunliff.

Buffalo, N. Y.—Motor Vehicle Co., under New York laws, with $20,000 capital. Corporators—James MacNaughton, Louis Du Broy and M. D. Ashford.

New York City, N. Y.—Weed Chain Tire Grip Co., under New York laws, with $100,000 capital. Corporators—H. D. Weed, H. P. Denison and H. E. Chase.

New York City, N. Y.—Twombley Motor Car Co., under New York laws, with $1,000,000 capital. Corporators—C. C. Dodge, W. I. Tombley and J. W. Murray.

New Rochelle, N. Y.—Westchester Motor Car Co., under New York laws, with $25,000 capital. Corporators—K. S. W. Glasser, J. A. Mahstedt and F. W. Bender.

Bridgeport, Conn.—Miller Garage Co., under Connecticut laws, with $35,000 capital, paid in. Corporators—Willard R. Miller, Alma E. Miller and Charles E. Peck.

Portland, Me.—Snow-Webster Automobile Company, under Maine laws, with $10,000 capital; to deal in automobiles. Corporators—F. S. Webster, L. A. Webster and Nathan Clifford.

New York City, N. Y.—Lock-Switch Mfg. Co., under New York laws, with $25,000 capital; to make automobiles. Corporators—William A. Courtland, David J. Newland and William O. Hammond.

Orange, N. J.—Automotor Transfer & Storage Co., under New Jersey laws, with $45,000 capital; garage. Corporators—Isaac R. Lloyd, John Oscar Ball, L. A. McNulty and Absalom P. Bachman.

Toledo, Ohio—Atwood Automobile Co., under Ohio laws, with $40,000 capital. Corporators—H. M. Smith, Park L. Myers, Dean V. R. Manley, Rufus H. Baker, F. L. Mulholland and D. D. Flanner.

Parkersburg, W. Va.—Hambrick Motor Car Co., under West Virginia laws, with $150,000 capital; to make automobiles. Corporators—J. W. Hambrick, F. E. Clark, E. W. Strack, B. D. Kehner and D. F. Strack.

Peoria, Ill.—St. Louis Motor Car Company, under Illinois laws, with $100,000 capital. Corporators and officers—Jesse French, president; Jesse French, jr., vice-president and treasurer; Fred Simon, secretary.

Minneapolis, Minn. — Auto Construction Company, under Minnesota laws, with $50,000 capital; to make automobiles. Corporators, P. S. Evans, George A. Hughes and W. T. Hartson.

Many Changes in Minneapolis.

Several important, as well as unexpected, changes have been made in the placement of Minneapolis, Minn., agencies for 1906. The Moulton-Jordan Co. will handle the Cadillac, which was formerly sold by the H. E. Pence Automobile Co. The Moulton-Jordan Co. will also handle the Peerless and Franklin, and the Pence line includes the Stevens-Duryea, Pope-Toledo, Buick and Autocar. The Northwestern Motor Vehicle Co. has taken the Ford, which was formerly sold by Walter Benz and the Barclay Automobile Co., in addition to the Thomas, will handle the Olds line, formerly placed with F. G. Winston, Jr. The latter agent will have the Locomobile and Woods Electric. A. C. Eckbergh will handle the Moline and the Haynes, the latter car having had no Milwaukee representative the past year. The Auto Construction Co. is building a new car, which will be called the Murphy Special. Milwaukee's other agencies and the cars they handle are as follows: A. F. Chase & Co., Maxwell; G. W. Caplin, Royal Tourist; Motor Car Co., Jackson; A. C. Bennett, Winton; W. C. Thornhill, Frayer-Miller and Reo; Haynes Automobile Co., White and Stoddard-Dayton, and Fawkes Auto Co., Rambler.

Escaping Gas Damages Garage.

Ignition of escaped gas in the upper story of the Southern Automobile Company's garage at No. 167 North Third avenue, Nashville, Tenn., last Friday, the 22d inst., resulted in a fire which destroyed a number of cars. The damage to the stock of the company amounted to $1,500, upon which no insurance was carried. Several private cars that were stored in the garage also were burned, but were insured.

Wolverine May Move to Bridgeport.

The Wolverine Motor Works, of Grand Rapids, Mich., has secured an option on a tract of land on Bay street, Bridgeport, Conn., giving a frontage of 600 feet on Bridgeport harbor, and will establish its plant there if suitable arrangements can be made with the common council. President C. L. Snyder, of the company, is authority for the statement that the company will not move East for a year, at least.

Rainier Selects Chicago Location.

The Rainier Co.'s Chicago branch has been established at 1255 Michigan avenue. F. L. Cordner, for many years in the theatrical business, has been appointed its manager.

In the Retail World.

Gregoire & Pearson have opened a garage on Middle street, Lowell, Mass. They will handle several well known cars.

The West End Automobile Garage Company, of West Newton, Mass., took possession of their new premises last week. They are located at 1435-1439 Washington street.

The City Machine & Mfg. Co. is a new firm that has located at Nos. 9 and 11 Orchard street, Detroit, Mich. It will make automobile wheels and do a general repair business.

The Standard Automobile Company, Detroit, Mich., will shortly move into its big new garage at Woodward and Alexandrine avenues. The company has secured a line of "sellers" embracing the Packard, Peerless and Autocar.

W. B. Thompson will build a fireproof garage at No. 24 California avenue, Atlantic City, N. J. The plans call for a brick and stone structure with concrete foundations and steel structural work. Its dimensions will be 50 by 100 feet.

With the addition of a new blacksmith and machine shop, the Orange Automobile Garage, of Orange, N. J., boasts one of the largest and best equipped garages in the State. They now have over 4,000 square feet of floor space at their disposal.

Two pieces of property on Seventh street and Grand avenue, Milwaukee, Wis., measuring, respectively, 100x50 feet and 75x150 feet, have been purchased by the recently incorporated Welch-Esteberg Automobile Co., of that city. The erection of a $30,000 garage will be begun immediately.

Because his new car was not "all that it was cracked up to be," George Mattuck has begun suit for restitution against the Riddell Automobile Co., of Des Moines, Iowa. Mattuck claims he traded his car for one the Riddell company sold, it being represented that the new car was worth $1,500. Instead, says Mattuck, the new car was not worth $500. Result, the suit.

The Automobile Outing Co., which has been operating a line of "Seeing Baltimore" automobiles, have branched out, and on January 1 will take possession of their new garage at the corner of North street and Madison avenue, handling the Electric Vehicle Company's line of Columbia electric and gasolene cars. To enable this move, the capital stock of the company has been increased to $50,000. The company is also negotiating for a lower priced touring car and runabout.

Cramer Heads the Buffalo Dealers.

J. A. Cramer, one of Buffalo's (N. Y.) leading dealers, has been elected president of the Buffalo Automobile Trade Dealers' Association. Other offices were filled as follows: Vice-President, W. C. Jaynes; secretary, D. H. Lewis; treasurer, John J. Gibson; executive committee, P. W. Eigner, E. C. Bull and N. P. Baker.

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To our Friends in particular and "The Trade" in general:

We Wish All a Bright, Happy, and Successful New Year.

May it Prove a Year of Progress and Satisfactory Results to All.

The Fisk Rubber Company,
Chicopee Falls, Mass.

(Makers of the Fisk Mechanically Fastened Tires.)

CADILLAC UTILITY

THE SINGLE CYLINDER CADILLAC
Will climb any hill that any automobile will climb.

THE SINGLE CYLINDER CADILLAC
Will travel any road that any automobile will travel.

THE SINGLE CYLINDER CADILLAC
Will travel as fast as anybody ought to ride.

THE SINGLE CYLINDER CADILLAC
Costs less to operate. Costs less to Maintain.
Requires less attention than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined, and won for them the unquestioned distinction of

AMERICA'S LEADING MOTOR CARS.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JANUARY 13-20, 1905

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THE

NEW YORK

SHOW NUMBERS

of

THE MOTOR WORLD

Will Bear Dates

January 11th and 18th.

As always, they will deal with the subject intelligently and well and be thoroughly representative of the industry.

Striking at Graft.

Philadelphia automobiledom has finally risen in its wrath against the peculations of the grafting chauffeur and wishes to be understood as having taken up the cudgels to suppress at once and forevermore the type of individual who has succeeded in making himself such a bane to the seller of cars and accessories. It is a spasm of virtuous indignation that has at one time or another swept over every other automobiling centre in the country, and the Town of Brotherly Love is somewhat belated in experiencing this juvenile malady. New York and Chicago have had their turns at it, not to speak of lesser lights.

It is the same old story. Emboldened by universal concession to his demands, which are merely the result of common usage established in the first instance by the dealer himself, the knight of the wheel has come to look upon his station as one that carries with it the right to levy tribute. It is a common every day occurrence, the country over, for the chauffeur to expect that part of the purchase price of every article bought for his employer is coming to him as his due. It is a tacitly understood arrangement in garage and supply store alike, and it is something for which the man behind the checkbook is in both instances largely responsible. He did it at first because that was the generally accepted method of getting business when the establishment was new, and now that it is not alone no longer necessary, but has grown to proportions that make it an intolerable burden, there must be an end to the custom forthwith.

It is not to be inferred by any means that this is a sweeping statement that takes in the dealer at large. There are doubtless some, probably many, who have never bowed the knee and who are above such a method of doing business, but there are more than sufficient of the other kind to have fostered this illicit practice to an extent that makes it a crying evil. The Automobile Trade Association of Philadelphia is about to undertake a crusade for its suppression, and one of the methods to be adopted will be to take the name of every chauffeur who makes an open avowal of his grafting propensity which must be satisfied as a condition precedent to the closing of a sale, and report this fact to his employer. The latter should most assuredly take a personal interest in aiding to put down a practice for which he pays more than any one else. These periodical upheavals against extortion have accomplished at least one good end in uncovering this form of stealing. If in the full light of such knowledge the owner is still willing to be bled by his underling he certainly has no cause for complaint, and so many are indifferent to it that the task of eradicating the evil is a most difficult one. Only increasing competition that wipes out the generous margins which make this drain on dealer and employer profitable will ever wholly do away with it.

About Self-Starting Devices.

There is a new phase abroad of the desire for the fitting of self-starting contrivances of one kind or another. It is the outcome of the Paris show, this new development, and is merely another illustration of how short a time is necessary for an extreme to be reached, once a demand becomes at all widespread. The European builder has with one accord settled down to turn out chasses of a standard type, so that for the initiated the interest in the great aggregation of new models was confined to a search for detail, and by far the most striking result uncovered lay in the amount of attention that a number of makers had devoted to the provision of something that enabled the car to be started from the seat.

One maker has gone to the extent of installing a complete compressed air plant, every item of which, with the exception of the source of energy, represents an additional auxiliary device to further burden an already accessory loaded car. Another has aimed at the same end in a different manner, providing an elaborate auxiliary mixture generating plant and a pump and its necessary interconnections between the two to transfer this product under pressure to the compression chambers of the cylinders. These are the work of representative French makers, and where they have blazed the way it is only reasonable to infer that others will follow.

Either of these expedients represents something that is the very antithesis of simplicity, and it is fair to suppose that they will be fully as liable to derangement as any other part of the mechanism. Experience would indicate that they are apt to be more so, for they are new and untried devices. Then a descent to the time honored crank will be imperative, but with a confidence in the new devices that appears totally unwarranted, at least two or three makers have seen fit to discard this ever present aid to the discovery of internal trouble, and in such a predicament it would seem to be the hay motor or nothing.

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But there is another and totally different side to the question that must present itself upon a moment's consideration. Nothing but the selling price of an expensive car could be made to include such a costly array of auxiliaries, and it is naturally on cars of this type that they have been installed. And what for? To save the lordly "hired man in a leather suit" from descending to the ground and using his biceps. To the owner of such a car, a chauffeur is an indispensable adjunct, and even if he be fond of driving himself, the hired man must do the work. There is a legitimate demand for a self-starting device and it is very general, but it must be something which in the end is as simple as the crank it displaces and as free from liability to derangement. The use of what practically amounts to an auxiliary power plant for this purpose cannot be other than a fad of short duration with a limited number of adherents.

The Master and the Man.

Somewhat after the same fashion as the doctrine of foreordination, the question of the chauffeur's license comes up for discussion about once in so often, and immediately after some mishap in which one of the fraternity has been more or less involved. Usually the subject is introduced by someone who would cast opprobrium upon the professional drivers of automobiles as a class, and wishes to place himself on record as standing for a system of universal and complex qualification of members of the class according to statutory regulation. In nearly every instance also, the opinions expressed are signalized by a broad-minded attitude which would single out the "hired help" as the butt of the measures which are advocated, leaving the owner and rightful sponsor for the welfare of the machine—sponsor, at least, according to the equitable rights of the case—free to go as far as he likes without let or hindrance.

The most recent of these splutterings has come as a result of a deplorable fatality which has nipped into the charmed circle of New York's finest. The author of the unoriginal opinion is a man well known in motoring circles, and should have had sufficient experience by this time to form an idea or two of his very own, and savoring of more originality. He has told the reporters that automobile accidents are becoming all too frequent, that something should be done to remedy the matter and lessen the peril to the motorist. He has referred to a system in use in France, and said that some such system should be in vogue in this country. He has referred to the methods of examining and licensing railroad engineers, and said that something of the same sort should apply to the professional automobile driver. Also, he is quoted as having made the following statement:

"Of course the law could not be such as to interfere with the owner of an automobile, or deprive the owners of machines from racing in the proper manner. The owner takes his own life in his hands, and if the chauffeur is willing to go with him, that is a matter which rests wholly with the chauffeur. If the owner drives his machine fast he is responsible. If the chauffeur drives faster than the law allows, no one is responsible."

In all of which he has erred to the extent of overlooking the fact that the laws which exclude from the manipulation of a locomotive all engineers who have not qualified in accordance with a set and very wise rule, also exclude all others, including the owners of the railroads themselves. No person, whomsoever he may be, is lawfully entitled to run a locomotive unless he has passed his novitiate in regulation style. And again, considering the matter of responsibility for accidents, although the yellow journals usually lay the blame of serious mishaps at the door of the capitalist owners of the railroads, the followers of the district attorney usually lay hold of the engineer and lock him up without delay, when his train has jumped a switch point or run by a block signal.

An analogy fails utterly of its purpose unless the analogue can be equally applied in all of its phases to the new case to which it is turned. Hence, either the cases of the man who drives a locomotive and the man who drives an automobile are absolutely similar, or they are absolutely dissimilar. Also, it is to be remembered that the word chauffeur, though used frequently in a restricted sense, is in France applied with equal impartiality to all men who drive automobiles —while they are driving. Therefore, if there be any logic in the matter at all, the men who cry for the licensing of chauffeurs should be prepared to sit up and pass the examination themselves. If they do not care to do that, they always may consider themselves at liberty to deal with the concrete, and let the abstract take care of itself. The world is overstocked with those who preach a gospel which applies to someone else, and disregard their own salvation. But its poor gospel that won't reach both ways.

PENNSYLVANIA OFFERS PRIZES

One Thousrnd Dollars in Nine Parcels to Demonstrate Wherein Tire Troubles Arise.

It is the belief of the Pennsylvania Rubber Co., of Jeannette, Pa., as it is the belief of very many other persons who have to do with tires, that most of the so-called tire troubles are due to either ignorance or carelessness, or both. The use of deflated tires, their improper mounting in the rim, their overloading, their injury by oil or gasolene drippings—each and all of these items are prime factors that make for trouble and expense.

The belief of the Pennsylvania Rubber Co. is so strong that they have evolved a plan to prove it true, and at the same time to effectually demonstrate that with proper care and handling here is no reason why tire costs should average anything like 35 per cent. of the total upkeep of the car, as their data embracing many cars and tires shows is the case.

The plan carries with it the offer of $1,000 in cash prizes, the amount being apportioned as follows: First prize, $500; second, $200; third, $100; fourth, $75; fifth, $50; sixth, $30; seventh, $20; eighth, $15; ninth, $10.

The prizes will be awarded at the end of the year 1906 to the owners and chauffeurs of the cars using Pennsylvania Clincher tires, which complete the twelve month, with the least tire expense per running mile.

The competition will be held under the following conditions:

Competitors may enter cars in the competition at any time during the year, but cannot hand in their records before the end of December.

The car must have traveled not less than 2,500 miles.

The distance traveled must be measured by an accurate odometer.

No bands or protective devices of any kind may be used on the tires, except that one band, covering not more than 12 inches of the tread, may be used temporarily if necessary on account of any injury to the tire.

Repairs must be charged at the rates charged by the company, and all repairs must be reported in detail at the close of the year.

Each competitor must notify the company of his intention of entering the competition and must give the number of miles registered by his odometer at the time of entering.

To assist competitors, the Pennsylvania Rubber Co. will supply what they describe as the most elaborate book dealing with the care of tires ever issued.

The Glide in Des Moines

The Bartholomew Co., of Peoria, Ill., makers of the Glide car, will establish a branch house at Des Moines, Iowa. S. W. Leonard will be in charge.

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WHAT WINDAGE MEANS

Its Full Effect Little Understood—Illustrations and Figures that Make it Clearer.

Probably the average motorist has but little real conception of the importance of the factor of wind resistance, or windage, as it frequently is called, in its effect upon the performance of the machine on the road. He feels the breeze, which is of the car's own making, blowing into his face, and knows that it varies in proportion to his speed, but beyond this he is not likely to go unless his attention is called to the matter directly. It is quite true, however, that wind resistance plays a most important part in the matter, especially when high speeds are to be made, and that its importance is quite apt to be neglected when the speeding capacity of the ordinary car on the road is under discussion.

Like the other factors of rolling friction, on the road, the matter of gradient, and the power which is absorbed in the bearings and other working parts of the machine, not commonly considered as bearings, the wind resistance is proportioned to the speed attained, but instead of varying directly with it, varies in accordance with the square of the speed. Thus a factor which at moderate speeds may be of comparatively small importance in its effect upon the total amount of power consumed, becomes of greater and greater importance as the velocity is increased, until its value may exceed that of any of the others. It is for this reason that in the construction of racing machines, the amount of surface presented by the car is cut down to its lowest terms, being in many cases not appreciably greater than the necessary area of the radiator. For it is desirable to reduce the windage as much as possible, and evidently the only way to reduce it is to cut down the amount of surface which is presented to the body of air directly in front of the machine.

In an effort to further reduce the factor after the area has been reduced to the minimum amount, the contour of the body frequently is shaped according to the laws of displacement which are used in boat design, the air being just as truly a fluid and subject to the same general rules as is water or any other liquid as far as that alone is concerned. Just how far this practice serves to reduce the resistance to motion which is imposed by the air, is hard to say in general, as a great deal depends upon the shapes of the surfaces used, and in the treatment of the area which is exposed to the draught of air which is created by the car in its motion. But it is safe to say that the effect cannot be made of very great importance in the design of the ordinary touring machine, on account of the amount of space which must of necessity be taken up by the body and wings, and indeed, according to one theory, it cannot be of great value under any circumstances, since it is the total sectional area of the machine, or, roughly speaking, the shadow which it would cast upon a screen placed directly before it, which measures the area upon which the wind acts.

According to the results derived from his experiments years ago, Seaton established the formula:

$$W' = 0.005V^2$$

in which W′ is the pressure of the wind in pounds per square foot, and V is the velocity of the car in miles per hour, the constant, 0.005, being derived by experiment. This formula has stood the test of time, and although several others have been determined by various investigators, it is generally conceded to be fairly correct. The actual resistance which the air sets up and which opposes the motion of the car is, of course, equal to this quantity multiplied by the sectional area of the machine, or the amount of effective surface which is presented to the body of air directly in front.

From the foregoing it will be seen that even so comparatively unimportant a factor as the addition of a single passenger to the load already in a machine may have considerable effect upon its speed when it is increased beyond a certain point. Doubtless many cars have been charged with being underpowered in more instances than one because of the simple fact that they were equipped with cumbersome bodies, which presented an area so great that by only a very slight addition of weight and area the motor was loaded beyond its proper capacity.

To take a concrete example, suppose the amount of surface presented by a car of standard type, and weighing somewhere in the vicinity of 2,200 pounds, to be 16 square feet, including the driver and, say, one passenger. When it is travelling at the rate of 600 feet a minute, which is equivalent to 6.8 miles per hour, the windage per square foot is found to be 0.23 pounds. Multiplying this quantity by 16, the area of the car, the resulting amount, or 3.71 pounds, represents the total resistance which is opposed by the wind. In this case the assumption is naturally made that the air is practically at rest, and that the machine, as it were, butts into a body of stationary air. Similarly, when the machine is travelling at the rate of 1,000 feet per minute, or somewhere in the neighborhood of 11 1-3 miles an hour, the total resistance due to windage, is found to be 10.42 pounds, and, again, when travelling at the rate of 4,000 feet per minute, which corresponds to 44.4 miles per hour, the total resistance amounts to 157.2 pounds.

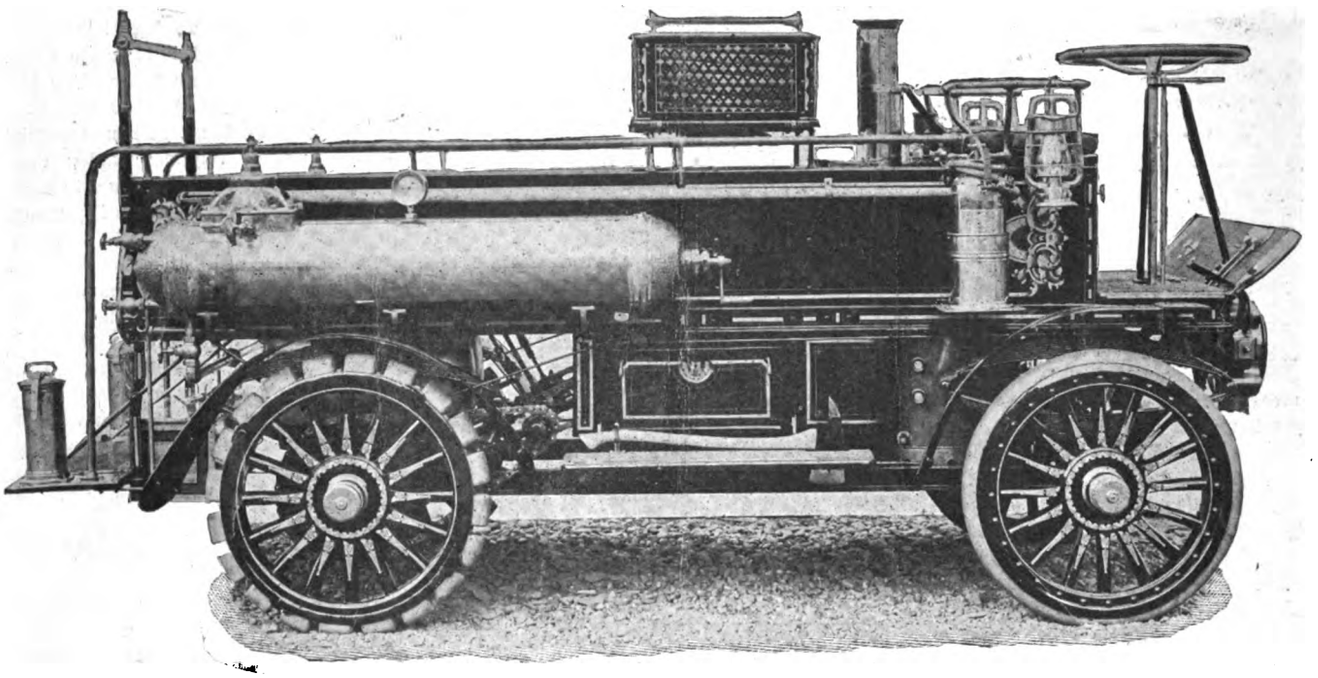
All of which appears to be very vague and meaningless to the unmathematical man unless he considers the resistance as being exactly equivalent to a pull of the same amount which is exerted upon a rope hitched to the rear axle of the car. Considered in that light, the importance of the windage at once becomes patent. The effect of this is, of course, to diminish the effective propelling power of the motor, which, in turn, may be likened to a pull upon a rope attached to the front axle of the car, when the analogy becomes complete. Thus, taking another example of the same sort, suppose the car in question to be travelling at the rate of 3,000 feet per minute, or 35 miles an hour, in round numbers. The draw-bar pull required under the circumstances would be, according to the Churchward experiments, recently recounted in these columns, something like 60 pounds per ton, and the weight of the machine, allowing 300 pounds for two passengers, would be 2,500 pounds. Then, the total draw-bar pull would amount to, say, 75 pounds. The wind resistance, according to the method of calculation here given, would be equal to 93.2 pounds in all. To overcome this backward pull, the same amount must be exerted in the opposite direction, or the pull upon the hypothetical rope attached to the front axle, must be increased by just 93.2 pounds, bringing the necessary draught up to 168.2 pounds in all.

Thus it will be seen that at times the factor of wind resistance may exceed that of all other factors excepting that of gradient, and may become the most important in the consideration of the possible speed of the machine. The analogy of the two ropes is the best means of studying the problem, as it presents to the mind a graphical illustration of the effects to be combatted, and is perfectly legitimate. The appended table gives a series of speeds in feet per minute and miles per hour, together with the windage in pounds per square foot, and the total windage of a machine presenting a sectional area of 16 square feet of surface, in approximate figures, and furnishes an interesting means of study:

Feet per minute.	Miles per hour.	Wind Res. lbs. per sq. ft.	Total Res. pounds.
500	5.681	0.1596	2.58
550	6.249	0.1930	3.12
600	6.818	0.2300	3.71
650	7.386	0.2968	4.75
700	7.954	0.3125	5.05
750	8.522	0.3593	5.80
800	9.090	0.4087	6.58
850	9.658	0.4616	7.35
900	10.227	0.5175	8.29
950	10.795	0.5763	9.16
1,000	11.363	0.6384	10.32
1,500	17.405	1.4375	23.01
2,000	22.727	2.5553	40.25
2,500	28.407	3.9918	64.5
3,000	34.090	5.7500	93.2
3,500	39.772	7.8255	126.2
4,000	44.454	10.2202	163.3
4,500	51.131	12.9375	209.2
5,000	56.818	15.9709	249.9
5,500	62.499	19.2982	310.8
6,000	68.181	22.9954	370.9
6,500	73.861	26.9764	434.0
7,000	79.545	31.3020	506.5
7,500	85.225	35.9375	578.0
8,000	90.909	40.8868	657.6
8,500	96.589	46.1554	736.2

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New London's Up-to-Date Fire Fighting Apparatus.



New London, Conn., does not believe that Hopedale, Mass., is either the "whole thing" or the "real thing." Hopedale may own the electric "chemical" fire engine illustrated in last week's Motor World, but New London possesses the real snorting steamer here pictured. It was little more than a year ago that a number of New London's progressive young men banded together as Niagara Hose, No. 1, and purchased this steam propelled combination chemical hose wagon, the first, so it is claimed, to be used in this country. The expenditure involved was $5,500, which the young men raised themselves, and they are also serving the city voluntarily, risking their lives in fighting the "fire fiend."

Niagara No. 1, as the wagon is styled, is the product of the La France Engine Co., of Seneca Falls, N. Y. In general appearance it follows closely the lines of the every day combination "chemical," with the possible exception of the stack forward. The engines, of which there are two of two cylinders each, are suspended under the body on pivots, at an angle of 45 degrees, and are permitted to sway just a trifle, as may be necessitated by the motion of the vehicle. Each engine is rated at 15 horsepower, permitting a speed of twenty to twenty-five miles per hour which can be easily attained.

A peculiar feature of the wagon is the fact that no differential is employed. Each engine, which may be worked independently of the other, is geared by a roller chain to its individual shaft, one on each side of the wagon, a roller chain engaging sprockets on the shaft and wheels. Despite the elimination of the differential, no perceptible skidding is said to result. The body is mounted on a channel steel primary frame, set on elliptical springs secured to a secondary channel steel frame, to which the axles are secured. An ingenious mode of steering is employed. A four-arm wheel secured to a vertical post connected to an eccentric steel plate of solid dimensions, which is secured by a collar to which a rod knuckle is secured to the left hand, comprises the outfit. The throttle, which controls both engines, is located in the centre of the driver's seat; the reverse is placed on the steering column under the wheel. The boiler is 28x30, and is composed of 1,000 half-inch copper tubes, and is tested to 1,600 pounds, but 260 pounds being maintained when the engine is housed. Three pumps supply water from two tanks of 40 gallons' capacity, sufficient for a run of nine miles. Each engine is fitted with an individual pump, while a third (automatic), acting independently, supplies water while the engine is in quarters. Two tanks, each of 30 gallons' capacity, supply fuel, but when in quarters city gas performs this function, which costs about $18 per month. Thirty-six-inch wheels fitted with four-inch solid tires are used. The chemical tanks, which extend along the sides of the car, are 30 gallons capacity each, for which 300 feet of hose is carried. One thousand feet of 2½-inch hose completes the equipment. If necessary one engine can propel the vehicle. The boiler is located in front, directly behind the front axle. The wagon was installed during September, 1904, and has rendered efficient service. That it is speedy a Motor World man can attest, as the result of a demonstration by the light of the moon. The members receive but little remuneration from the city, and this little is expended for the services of a day watchman. No night watch is necessary, as several of the volunteers occupy quarters from sun-down to sun-up.

Here's the Newest Windshield.

"Pare-brise" is the title of the newest form of glass wind shield which is being placed on the market by a French firm. It consists of the usual glass panel, but the latter, instead of being rigidly fastened, is attached to a leather apron hung on curved rods so as to be thrown in by the force of the wind until it is over the steering wheel and just in front of the driver. Its advantage lies in the fact that when the car is in motion, the glass is so close to the face of the driver that there is no chance for the wind to be drawn in behind the shield, as in the case of the fixed glass protector. The makers claim that it is unnecessary to use goggles in connection with this modified form of shield, which is made so as to be readily applicable to almost any style of top.

"Safety Valve" for Pneumatic Tires.

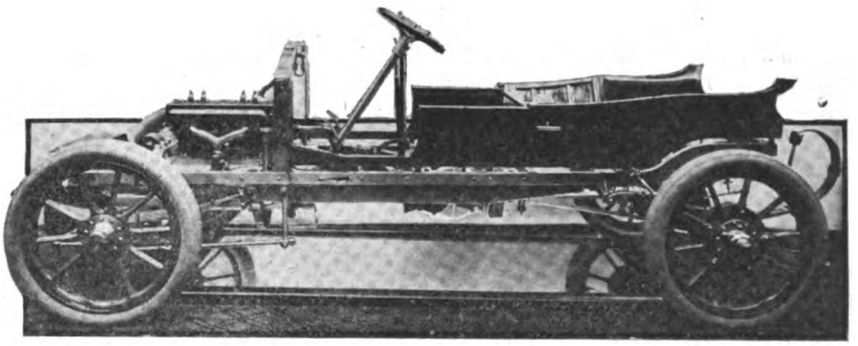
Whether tires have ever actually burst as the result of pumping them up with cold air and then heating them by fast running is something that cannot be said to a certainty, for when a tire has burst, it is usually rather difficult to exactly trace the cause. But, taking it for granted that this expansion is sufficient to increase the internal pressure to a degree that threatens the safety of the tire, a French inventor has devised a safety valve, termed the "Eclair," which may be set to blow off at a certain pressure in excess of the normal. Not to mention others that might come with its use, at least one drawback attendant upon the employment of such a valve would be the necessity of constantly inflating due to the loss of pressure each time the tire cooled.

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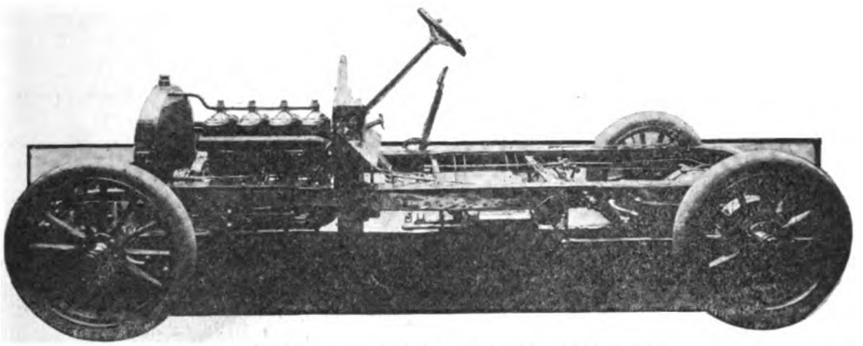
ABOUT THE PARIS SHOW

Magnificent as a Spectacle but Not Fruitful in Marked Developments—Some of the More Notable Innovations.

Paris, Dec. 12.—The annual show which was officially inaugurated in the Grand Palais by the President of the Republic on Friday has opened the eyes of a good many people who thought that the organization of automobile exhibitions had reached finality in much the same way as the cars have reached it. Only a year ago people were wondering how it would be possible to improve on that show with its then unparalleled blaze of light and decorations setting off to the best advantage a building which seems to have been specially constructed for exhibitions of this kind. But if the art of decoration appeared then to have reached high water mark it has now attained to the volume of a flood. The whole building is bathed in light which amazes, bewilders and delights the eye as it travels over the glass roof with its myriad of incandescent lamps and takes in one stand after another, each rivalling its neighbor in the beauty of its decoration.



C. G. V. DROPPED FRAME AND C SPRING.

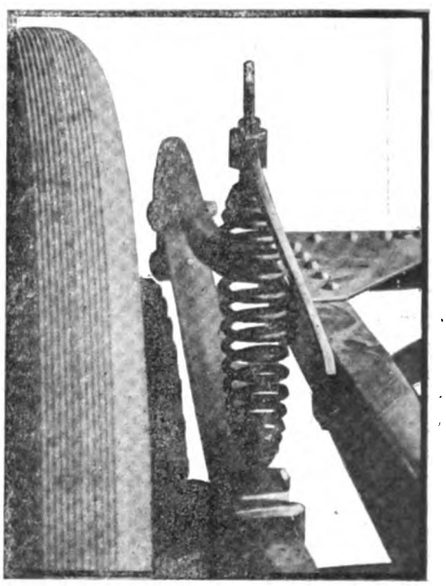


RAPIRE WITH OUTSIDE TORTION ROD.

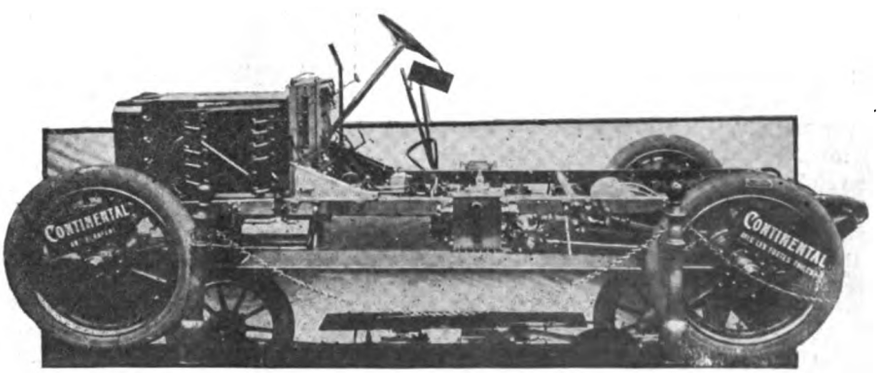
We do not propose to dwell at any length upon a subject which would delight the descriptive writer and carry his pen along for hours in a vain attempt to do it justice. It would provide abundant matter for an art publication. There are some stands that have cost $7,000, $10,000 and even more. Each is a gem of artistic decoration. There is no overloading, but the whole is characterized with the quiet restraint of the true artistic feeling, and the eye as it rests on some of the stands conveys the impression that the art of the decorator has been carried to perfection. The Panhard stand is picked out in soft white electric lights, Gillet-Forest has a luxuriant arch of rich faience, the Delahaye stand is hung with crystals, and everywhere one is charmed with the decorations which serve as a costly and beautiful setting for the vehicles exhibited. The French have never done anything better. One naturally asks whether it will be possible to improve on this magnificent display at future shows, but each succeeding one has been so full of surprises that it is futile to phophesy.

What is the meaning of this extravagant expense in decorating the Salon? Or can it be called an extravagance at all? So much money has been spent by makers that it will need a considerable amount of business to recoup them for the outlay on their stands. If they have made such great sacrifices it is evident that they see everything depends upon making the Salon an artistic success, and as a matter of fact it is because the cars are themselves no longer an attraction of themselves that it is found necessary to draw the public by appealing to their sense of sight and sound. Color, light and music appeal to all classes, whereas only a small proportion of the public are sufficiently versed in automobile mechanics to understand and appreciate the little points of detail which nowadays constitute improvements in the automobile.

Superficially there is a noticeable sense of uniformity about the vehicles exhibited, much more so than at previous shows. At first sight it appears as if the majority of makers are exhibiting the same vehicles as a year ago except that they are perhaps more highly finished and differ in powers, but when we go thoroughly into the details of construction we find many little things that show how patiently manufacturers are perfecting their cars and are bringing them to a condition that leaves us wondering



POTRON SHOCK ABSORBER.

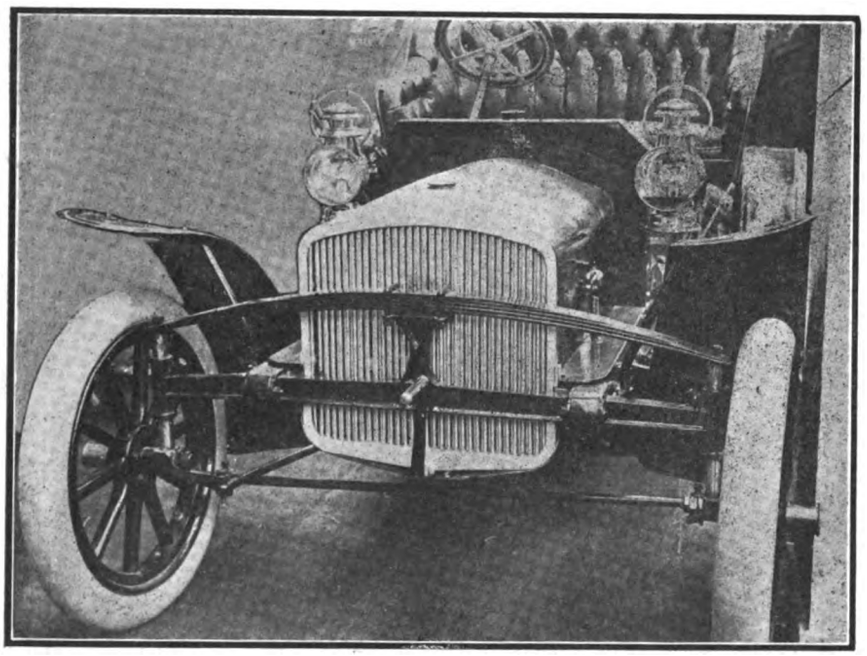


WEIBER & RICHMOND CHASSIS.

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whether it will be possible to improve them further.

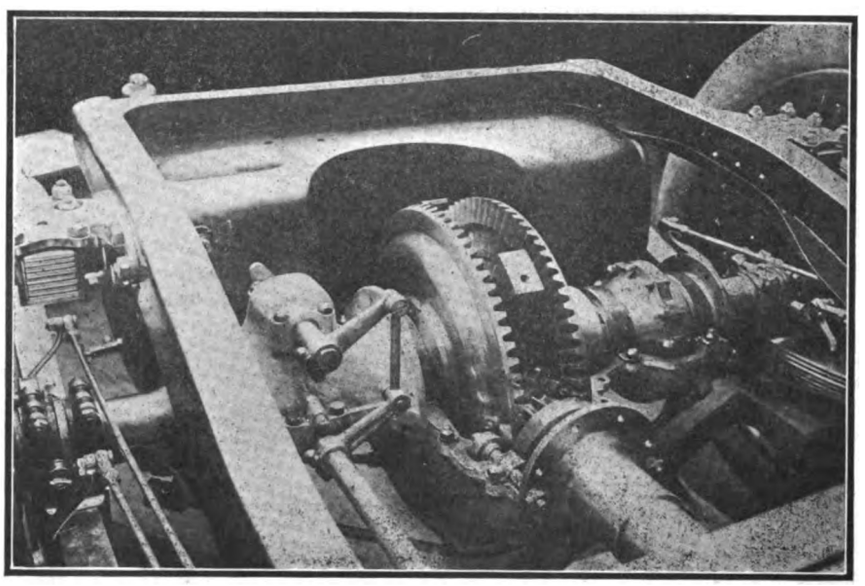
While the automobile continues to develop along its present lines we can scarcely advance much more than we have done at present, and as all those who have striven to break away from the standard design have come back to it there seems to be small



SIZIARE'S NOVEL SUSPENSION.

chance yet awhile of the industry striking out on new lines of progress. It may possibly be done in the future, but for the moment we have got into a fixed groove, and after advancing with marvellous rapidity for ten years we are slowing down like an express train which has got to the end of its journey. Whether this is a satisfactory sign or not it is at the moment impossible to say. We have yet to see what will be done in the way of improving little details, many of which are sadly in need of improvement, and there is every likelihood that the refining of all the parts and adapting them more cleverly to each other will produce a homogeneity which will result in a car that in speed and control will have all the elasticity of the steam vehicle. Makers will still have to carry out a vast amount of patient research work before attaining this very desirable end.

It is because it has become very difficult to present sufficient real novelty to attract the crowd that the organizers of the show have to adopt other expedients in the way we have already described. They have made the Salon one of the greatest functions of the year. By a free distribution of invitation tickets the building on the opening day is packed with a surging crowd, and the foreign visitor who looked down from the galleries saw a sight that could probably be witnessed in no other city in the world—a vision of a huge mass of humanity moving along the gangways, a blaze of light above, below and around him, a loud hum of a myriad of voices, and the great edifice filled with the sound of music. Since then visitors have been crowding into the building, making an inspection of the stands a matter of no small difficulty. It is too early yet to say whether the business will correspond with the popular success of the Salon, as



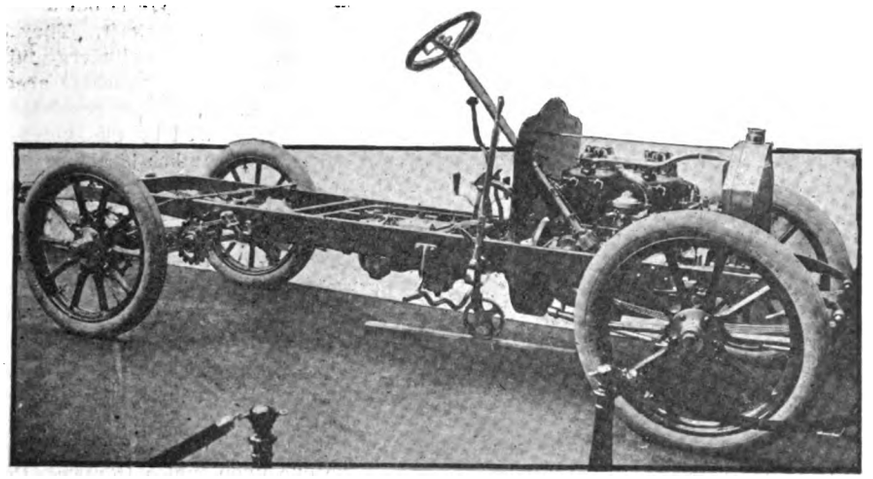
PILIAIN'S DOUBLE DIRECT DRIVE.

agents and others generally spend a few days in thoroughly exploring the building with its numerous galleries and rooms giving off one into the other before placing their contracts, but judging from the number of American, English and other foreign visitors it may reasonably be supposed that exhibitors will not have to complain of the amount of business done.

There is in any case nothing to show yet that the Paris Salon has been in any way affected by the Olympia Show, which was believed by the British trade to have knocked the last nail into the coffin of the French exhibition. This summary execution has not yet taken place, nor is it likely to do so for a long while to come. So far is Olympia from keeping English people away from the Salon that the number seems fully as large as in previous years, a large proportion of them being of the buying class who are on the lookout for novelties that they were unable to find at the London show. The number of American visitors also seems to be larger, though they are nearly all manufacturers and engineers who have come to see what there is to learn about Continental construction, while there is also a good influx of visitors from Germany and Belgium and other countries. This thoroughly international character of the Salon proves that it has lost nothing of its prestige, and that Paris is still the great centre of the European automobile industry.

Seeing that improvements are only now to be seen in matters of detail it is obviously impossible to deal adequately with the show until many days have been spent in a thorough examination of the exhibits. In the way of applications of mechanical principles there is nothing new, or at least nothing has come to light so far as we have gone with an inspection of the multitudinous exhibits. There is a section devoted to new inventions which may possibly reserve some surprises, but the automobile industry is so exacting that no invention which has not been proved can be regarded as having any practical value, and the most interesting things are often passed over by visitors unless it can be shown that they have been adopted by the trade. The most likely things have a disconcerting habit of failing when put to practical test, and with the increasing exactions of manufacturers the work of the inventor is becoming harder

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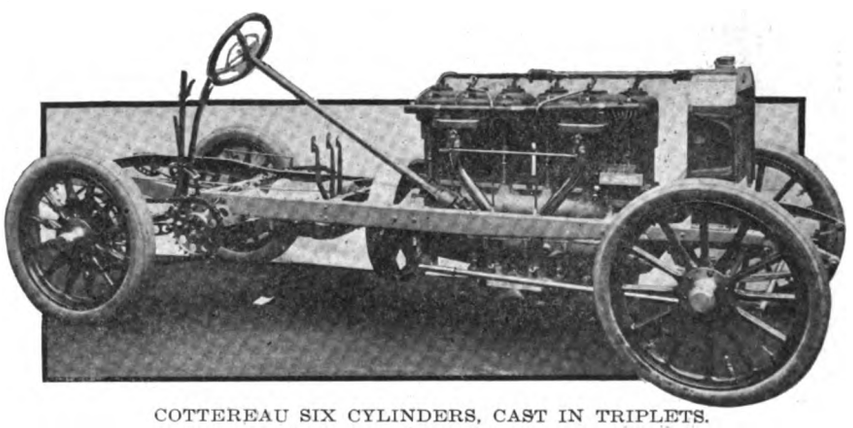


LUC COURT TELESCOPIC FRAME.

every year. In the way of gasolene cars we have seen nothing yet that shows any noticeable departure from standard patterns. There are nevertheless several interesting vehicles, notably, a new steam car by the well known engineering firm of Weyher & Richmond, and a new gasolene-electric vehicle about which a good deal is being said at the moment.

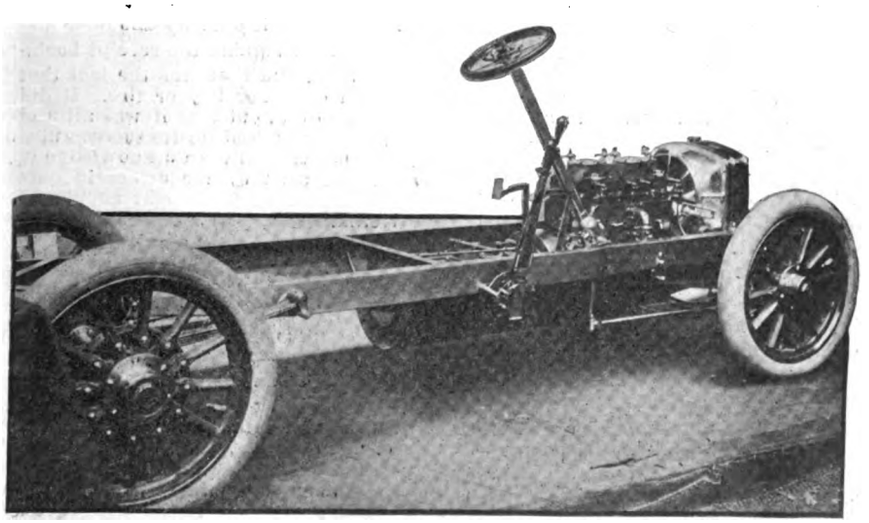
As regards the general arrangement of propelling mechanisms there are very few departures of any interest. Most of the leading firms show little change in their standard patterns. Decauville have practically the same type of car that was exhibited last year, with the exception of little changes in detail, mainly for facilitating control, while it must be admitted that the finish here, as everywhere else, is decidedly superior. In fact, it is difficult to imagine how anything better can be done in the way of adjustment and finish. A little while ago it seemed as if makers were returning to the old practice of casting the cylinders in pairs so as to facilitate the erection, but as yet we have not seen much evidence of this in the show. The general tendency is still to cast the cylinders separately, as formerly, but everything is done to relieve them of any inconvenient accessories, so that the valves and parts are easily accessible without its being necessary to remove or touch any other part of the mechanism. For the same reason on many of the cars the crank cases are rectangular with side inspection plates, while removable plates cover the camshafts.

Among steam cars Serpollet has a novelty this year in a chassis fitted with a double acting engine. Up till now Serpollet has always employed a four-cylinder single acting engine with the cylinders opposed, but in his new vehicle the clinders are side by side. He has also adopted a feed water heater in the form of a cylinder through which passes the exhaust in a spiral tube whereby the feed water is raised to a sufficient temperature to appreciably economise the consumption of kerosene. Exactly the same type of feed water heater is also employed in the Chaboche steam car, but in this case a pipe extends from the cylinder along the whole length of the frame to the boiler at the rear, this pipe being concentric so that the feed water in the outer space is brought to a pretty considerable temperature by the time it enters the generator. The builders of steam cars are obviously doing their best to give them as close an appearance as possible to the gasolene vehicle, and so far as the outside goes there is nothing to distinguish them. Steam is obviously far from being vanquished by the internal combustion engine, and to a certain extent it has even made some progress during the year, and it will be seen from the vehicles that we shall describe later on that the older power successfully fulfils the conditions of the touring carriage, and that it is not yet in danger of being finally ousted from the market.



COTTEREAU SIX CYLINDERS, CAST IN TRIPLETS.

Among the many minor features of the cars which, though small in appearance, have nevertheless a considerable influence upon the control and running of the gasolene car is the self-starting apparatus, of which several specimens of different types are shown on various cars. Mors employs a system of injecting a charge into the cylinder under the action of compressed air. Bolted to the side of the chassis is a large pump of which the piston is actuated by hand. The air from this pump is forced into a small tank containing gasolene, and by means of a small lever on the dashboard which raises all the induction and exhaust valves the carbureted air passes into the cylinders. As soon as the gas has forced out the exhaust already remaining in the cylinders the valves are closed and the charge ignited. This system is shown in operation in the annex and appears to be pretty certain in action. Quite a different principle of self-starter is that shown on the Renault car, in which the flywheel is rotated by a compressed air pump.



CAMILLAC IGNITION CAM SHAFT WITHOUT PUSH RODS.

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For this purpose the air in a small cylinder is kept under pressure by the exhaust, and when it is required to start the engine the air passes into a small centrifugal pump carrying at one end a pinion which is brought against the toothed flywheel. On starting, three cylinders work and the fourth recharges the compressed air tank until the maximum pressure is reached.

More attention has been devoted to the production of the "voiturette"—the light car that French manufacturers have up to the present left it to other builders to supply. The manner in which American makers have done this and made inroads on the Continental market has awakened them to a realization of the fact that it is time to get in line or it will soon be too late. One that immediately attracts the attention of the initiated eye by the peculiarity of its suspension is the Sizaire et Naudin, a head on view of which is illustrated. The runabout is numerous, but is kept more or less in the background by makers showing their more ambitious productions, and on the whole those exhibited reveal no particular novelties.

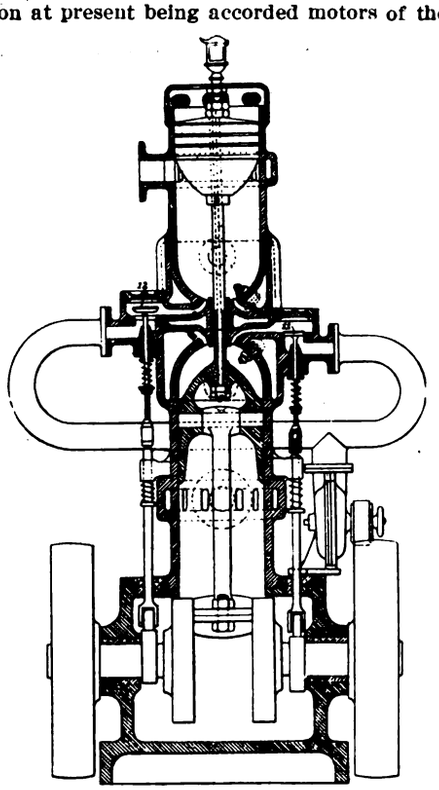
The use of "amortisseurs," or shock absorbers, is a tendency that has become general, and the prospect appears certain that the market will in the near future be flooded with devices of this kind. They range from the very acme of simplicity, as in the case of the Potron—here illustrated, which is nothing but a supplementary helical spring, the tension of which may be adjusted by means of a nut—up to those that involve endless complication, and consequently stand small chance of general adoption. Some six cylinder chasses are in evidence, such as the Coleveau, pictured here, but there appears to be no general desire on the part of the prominent makers to follow the lead of English manufacturers in this respect, although, as already stated, some firms, such as Panhard-Levassor, will make six cylinder cars for British consumption.

One detail noticeable on several cars has been the transfer of the ignition cam shaft from its accustomed place to a point directly under the ignitors in the case of those using low tension ignition, such as in the case of the Camillac et St. Benol. In almost every case the tendency to eliminate every small part from the engine that is not absolutely necessary is very noticeable, of which the C. G. V. "Voiture de Ville" and the Rapid, pictured in the accompanying photograph, may be taken as instances. The latter car also embodies somewhat of a novelty in the location and form of its torsion rods, which are placed outside the frame and are supported horizontally from the ends of extension plates. The Pilain drive, which is an ingenuous and compact adaptation of the bevel gear to the needs of the change speed, attracted considerable attention. An illustration of it with the cover removed is presented here, and it will be seen to consist of no less than three concentric bevel gears mounted on the rear axle, forming a combination that has the advantage of providing a direct through drive on the third and fourth speeds.

The seeker after novelties was not entirely disappointed, for in the Luc Court chassis at least was to be found something not hitherto considered a feature of the car. This consisted of a telescopic frame, by means of which different types of body and different lengths of chassis could be employed in connection with the same motor and transmission. As the detachable portion includes the driving wheels and rear axle, it affords the further advantage of permitting of a change of gear in accordance with the weight of the body employed. The frame comes apart just back of the dashboard, the forward part of the rear section being supported from a point under the change speed gear box on a caster, which is lowered by means of a screw.

New Ideas in Two-Cycle Engine.

In view of the increased amount of attention at present being accorded motors of the



two-cycle type, interest attaches to a novel design evolved by a French inventor, termed the Torrent motor. It consists of two cylinders superimposed with their combustion chambers abutting. They are connected through the medium of a distributing chamber of novel design which constitutes the principal feature of the invention. Instead of utilizing the crank chamber and piston to generate the initial pressure, a centrifugal pump driven by friction from the flywheel is employed. The location of this at the right hand side in connection with a manifold terminating at valves of the ordinary type in the double chamber already referred to will be noticed in the sectional sketch. It will be further apparent that both pistons are connected although there is but a single connecting rod and crank shaft. They are oppositely disposed in the cylinders and as they fire alternately the crankshaft accordingly receives two impulses per revolution.

In the position pictured by the sketch the lower compression chamber is about to fire and the inlet valve 12 supplying the upper chamber is open, while 11 is closed. Both are actuated through the medium of cams on the main shaft in the usual manner. At the end of its stroke the exhaust is through a series of ports extending around the entire circumference of the cylinder in accordance with the latest approved practise for this type of engine. With the exception of the connecting rod and attachments the superimposed cylinder is in all respects a duplicate of the one upon which it rests. Cooling is by means of water circulation, the jacket, however, only enclosing the two combustion chambers. The remaining features of the construction do not differ essentially from customary practise in this respect. Owing to the great height of the motor, made necessary by placing one cylinder over the other, it can hardly be said to be a type available for automobile use.

Tire Thief "Turns" Telephone Trick.

At last the "con" man has tried his hand on the garage keeper and the particular victim, W. H. Durphy, the manager of the Electric Vehicle Company's Chicago branch, is mourning the loss of $63—the value of a brand new shoe for a tire. This is how it happened:

"This is John J. Blank's office, Mr. Blank's secretary talking," came a voice over the 'phone one morning a few days ago. "Have you a 34 by 4½ blank outer shoe?"

"Have none in stock, but can get it in a short time," Mr. Durphy hastened to reply. "Please be so kind," came the request. "as Mr. Blank is in a hurry. He will send his chauffeur for the tire."

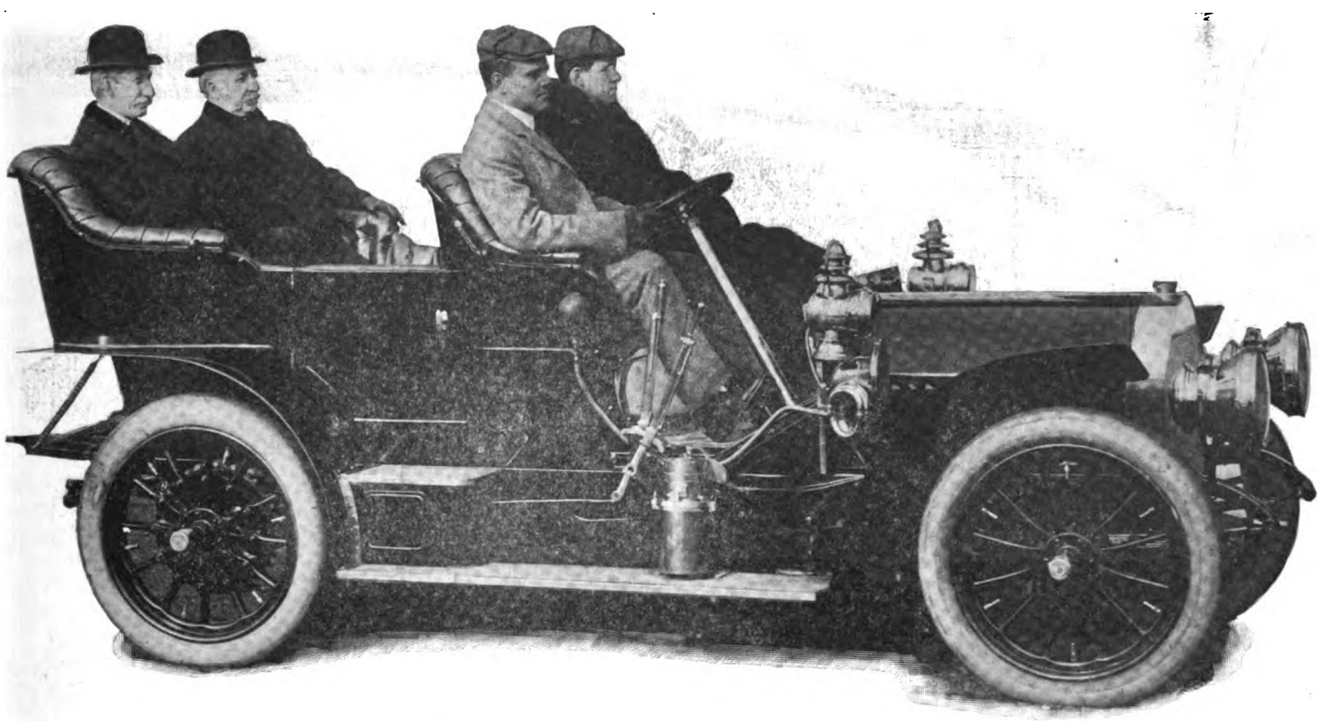
A small boy, togged out in the usual leather cap and coat, put in an appearance a little later and asked for the tire. He was evidently equipped with all necessary information and was given the article without question. He threw it over his shoulder and disappeared after signing the receipt book, "Sid Con" (Kahn), and that was the last that has been seen of either boy or tire. It did not take long to find out that it was all a clever game, which required for its successful working no other capital than a knowledge of the size of tire used by the owner in question and the fact that he bought supplies from the victim.

Will Use the Metric System.

In reproducing the Berliet car in this country, the American Locomotive Automobile Company will adhere to the metric system in every detail, thus making the American-made car an exact duplicate of the one made in France. The initial output of the Locomotive company's plant in Providence will be 200 cars of 24-30 and 40-50 horsepower each. All will have four cylinders, of course, and "all working parts inclosed" will be one of the battle cries.

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The Refinement of the Locomobile.



LOCOMOBILE, MODEL E, 30-35 H. P., $5,000.

It was hardly to be expected that the 1906 product of the Locomobile Company of America, manufacturing in Bridgeport, Conn., would incorporate any very marked departures from previous practice. To have done so would have been somewhat in the nature of gilding refined gold. By the early adoption and subsequent perfection of such advanced constructions of such features as four cylinder vertical motors, enclosed timing gears, automatic carburation, sliding gear transmission, yielding a direct drive on the highest speed, and solid forged axles, it produced a car that was a credit to the makers and to those who used it. This being the case, the designers have been at liberty to confine their attention to the improvement of the minor details from year to year, the absence of distinctly radical changes in the make-up of the machine allowing opportunity for a process of evolution and elimination in the lesser parts which has worked out a most excellent result. The policy employed in the drawing up of the 1906 models has been the same as has been previously followed; in consequence, the new cars are not essentially different from those of last year save in point of detail improvement.

The output of the coming season will comprise two models, to be known as "E" and "H," the one being of 15-20 horsepower, and the other being rated at 30-35. Both are laid along the same lines, the only differences noticeable between them being due to the difference in size. Both are of standard type throughout; are equipped with make and break ignition, the energy for which is supplied by the Locomobile's own magneto, and the Locomobile sliding gear transmission, which is practically unaltered. The frames are of pressed steel construction, the section of the members being 3-16 inch, heavily reinforced by gussets at the corners, and inset at the dash boards to give a liberal wheel clearance and wide turning radius. The spring suspensions are of the semi-elliptic type, long radius curves being employed, and the axles are of the I-beam section, drop forged from a special formula steel stock.

The changes which have been introduced in the construction of the motors comprise among others a new method of screwing the valve caps into the cylinder castings instead of clamping them in place as heretofore; a rearrangement of the water piping whereby the inlet to the jackets is through a pipe which, entering at the top, leads to the lower part of the jacket space, where it discharges, the return being from the top, in the usual way; a balanced throttle valve which operates without friction, and is not affected by the suction of the motor; and a change in the construction of the ignitors so that they are inserted into the cylinders in the form of taper plugs, instead of being faced against the outside of the castings. The action of the automatic air inlet and the governing of the motor in general have been improved, the feature of controlling the spark by shifting the ignitor cam shaft longitudinally and the use of spiral cams being retained.

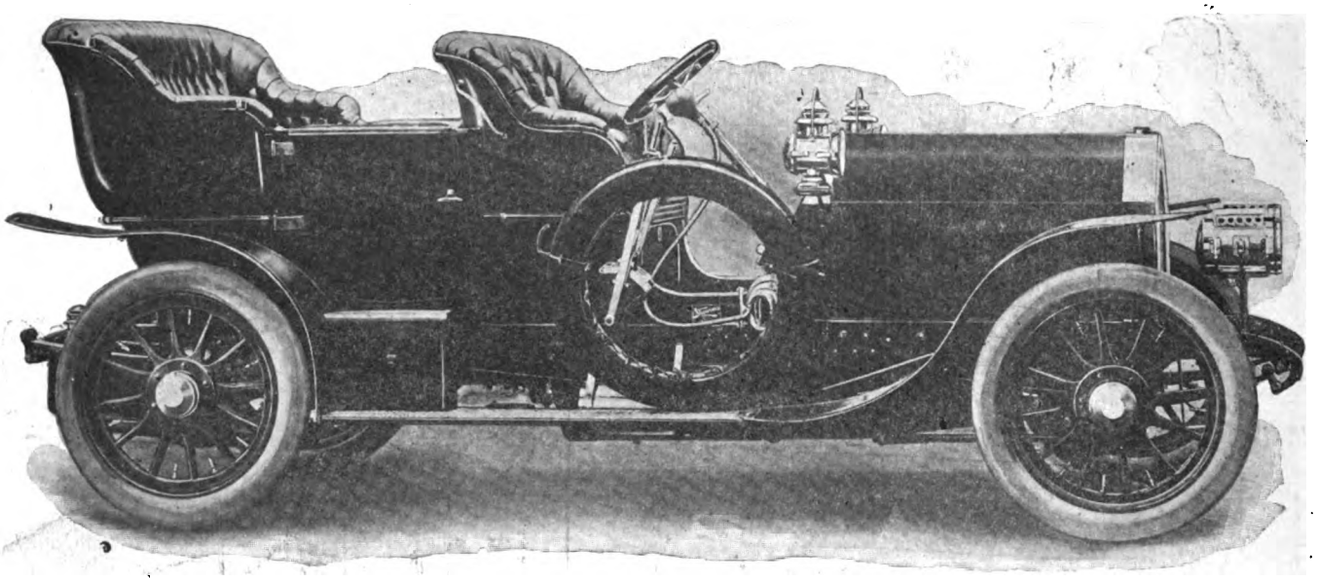
The greatest of care has been exercised in the construction and testing of the magneto equipment, from the method of attachment, which has been reduced to a single nut with its lock nut and cotter pin, down to the last details of such points as the sweating in of screws which are not used for adjustment, to prevent them from backing out. The matter of lubrication also has been attended to with care, overlubrication being made impossible through the provision of overflow holes in the oil wells and the installation of protecting washers on the armature shafts to prevent the oil from working in on the windings.

The clutch is of the aluminum cone variety, leather faced, and is provided with a double universal joint in the driving shaft, to permit of automatic alignment and seating in the flywheel. The arrangement of the parts is such that either the engine or transmission may be removed from the chassis without disturbing the other mechanism, the connection between the two being broken by the removal of a single bolt in the universal joint. In the transmission the feature of a manganese bronze frame or body portion of the case is retained, guaranteeing a fixed relationship between the bearings and preventing distortion from any cause.

In the mechanism of control an alteration has been made to the extent of arranging the spark and gas levers to work over a stationary quadrant, giving them a fixed relation to the driver, irrespective of the position of the steering wheel over which they are mounted. The pedals are of the push type, very strongly made, and a foot accelerator is placed at the right side of the footboard, as in former models. The brakes are of the usual order, those upon the rear wheels being internally expanding, while the third, which is operated by a pedal, is mounted on the countershaft at the right of the steering column. This brake is distinguishable for the

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The Stearns Car for 1906.



great amount of wearing surface which is presented, that of the smaller of the two cars, for instance, being 16 inches in diameter by 3½ inches wide.

Considering the two models separately, the smaller, model E, is specified as having a 3¾ by 4½ inch motor, testing up to 22 horsepower on the brake, 93 inch wheel base, standard tread and 32 by 4 inch tires. It is fitted with a characteristic side entrance body seating five passengers, and weighs something like 1,900 pounds. Model H, on the other hand, has a motor dimentioned 4½ by 5½ inches, turning up 40 horsepower on the stand, and running on 106 inch wheel base and standard tread; 34 by 4½ inch tires are used, and the side entrance body has a seating capacity of five to seven passengers. The machine weighs 2,900 pounds complete with equipment. Both cars are driven by side chains, and might be described as being of the Continental type in so far as that term signifies a sturdy and serviceable automobile.

Inclination of the Fuel Tank.

A most important point in the mounting of the gasolene tank of a car which is fed its fuel by gravity, and one which the early designers entirely overlooked and many of later enlightenment have neglected, is that of sloping the bottom toward the side from which the supply is drawn, and taking the feed pipe from the rear side of the tank rather than the front. By this means a uniform flow of gasolene may be secured until the very last drop has been consumed, and also when hill climbing, a greater head is obtained than otherwise would be possible, owing to the fluid running to the rear side of the tank. This feature is embodied in several of the new cars which are being brought out, and is worth consideration when a new machine is to be chosen.

Concerning the 1906 Stearns.

One of the "truly American" cars which always have held a reputation for substantiality and high grade appearance and action is the Stearns. Its appearance in 1906 dress, as here shown, would seem to indicate that the F. B. Stearns Company, of Cleveland, Ohio, is preparing to market during the coming season just another such machine as it built last year and one which is equally up to date. The type is that of the heavy touring car, and its capacity is five passengers normally, an additional couple being accommodated on occasion by the use of a pair of door seats. The rated horsepower is forty to forty-five.

The motor is of the regulation four cylinder type, the elements being cast in pairs. The high tension magneto system of ignition is employed, a set of dry cells being provided for emergency use, and for the cooling system a tubular radiator with forced draught is used. A sliding gear transmission giving four forward speeds and the reverse is used, the gear changes being obtained by the selective system. The final drive is by slide chains from a transverse countershaft to each of the rear wheels. The frame is of pressed steel, heavily made and put together in massive style, making that essential portion of the machine endurable beyond all manner of doubt. The emergency brakes expand internally upon drums attached to the rear wheels, while a foot brake contracts a band on the differential sleeve. The wheel base is 118 inches, the tread standard, and the tires 36 by 4 and 4½, front and rear, respectively. Fully equipped, the car weighs 3,000 pounds.

The Turbine Combustion Motor.

It should be a matter of rejoicing to every one connected with the automobile industry that an internal combustion turbine engine at length has made its appearance, after so long a period of promise and waiting. The Retz motor, which has been on exhibition at the Paris Salon, may not be in every way a successful engine; it may not be able to compete with the types of reciprocating motor which already are in use, or it may, but at all events it is a step in advance, and marks the beginning of a new epoch.

The motor in question has a series of nine cylinders arranged vertically about a central axis and all opening downward in front of the face of the turbine proper. The ends of the cylinders are tapered off to form jets through which small bodies of water, in lieu of the ordinary piston, are impinged against the vanes of the wheel by the impulse of the gas.

Paris is a long way from the Bowery, and the age of the gas turbine may be a long way off, too, but it is encouraging at least to hear of a turbine motor that will go, after all that has been said and done in this country and elsewhere, and after all the promise which has been held out to the inquirer through the columns of "The Patent Gazette."

To Keep Oil from Congealing.

It is well to remember that during the cold weather a thinner oil should be used in the motor than is employed in summer. In case a special brand of suitable oil cannot readily be procured, a simple expedient which serves to advantage is to thin the regular lubricant with a small amount of pure sperm oil, the proper proportion being two ounces to the pint or less. Sperm oil is included in the composition of nearly all, if not all, cylinder oils, and serves a useful purpose; its freezing point is very low, however, and by increasing the amount in the mixture a very good insurance against congealing is secured at low cost.

"Yes," remarked the new agent to the prospective buyer, "we have two kinds of gasolene cars—limousines and un-limousines—but, honestly, I'd recommend a four cylinder electric."

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The American Car Finds Favor in Holland.



Although it is not generally known, the Mitchell Motor Car Co., of Racine, Wis., has for the past year been conducting a quiet but energetic campaign for foreign trade. Their Mr. Read has been systematically touring Europe and the far East in the interests of the company, and, of course, has established many agencies. One of his good placements was Holland, where Mr. J. D. Mijer, of The Hague, is looking after Mitchell interests in the land of dikes and windmills. The above photograph, taken while Mr. Read was in Holland, shows Mr. Mijer at the wheel of a Mitchell touring car; Mr. Read, the missionary, is beside him. It will be noticed Mr. Mijer has a small American flag, also one of his own country, mounted on the dashboard. Whether this was a token of respect for his guest, the all American car or both is not stated. Anyway, he looks pleased. Mr. Mijer recently made a non-stop run in this car from The Hague to Berlin, a distance of about 500 miles—a performance that served to turn attention to the car.

The Bull and the Red Car.

There have been rumors anent the entrance of the motor car into the arena in Spain, but the following appears to be the only authentic case on record where the automobile was used for bull fighting, and particularly where the encounter was solely of the animal's choosing. A bull escaped from a farm at Neuilly, a suburb of Paris, and found his way to the Bois du Bologne, where he immediately proceeded to lay low an enemy in the shape of a large red car. He furiously charged it from the rear, but the driver saw him coming and put on full speed ahead. Assisted by several policemen acting in the role of banderilladores, who waved their capes before the animal in true bull ring style, the driver assumed the combined parts of picador and matador, and the animal was finally cornered and shot.

France Creates an "Assembling" Record.

A record breaking feat in car assembling was performed the other day in a French factory, when the parts of an 8-horsepower voiturette, being brought together on the floor, the mechanics of the shop started to put them together in the presence of a representative of the Automobile Club of France. In just four hours from the start the car was entirely completed and out on the road in charge of its designer. As a test it was put over something like 750 miles of road at once and without being subjected to more preparation than was accorded it in the making, and covered the distance in sixty-one hours and a half.

How the Accident Happened.

A Kansas City woman, who owns and drives a neat little gasolene runabout, had an accident recently by running into a buggy. As she was moving along very slowly and the buggy was standing still, very little damage resulted. The buggy was not harmed, but the automobile's steering apparatus was slightly broken. The woman that evening was telling her husband of the accident.

"How did it occur?" he asked.

"Why," replied his wife, "I was just creeping along near the curb when a woman wearing the loveliest new polo turban I ever saw passed on the sidewalk, and"—

"That's enough; I understand," replied her husband.—Ex.

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CONCERNING CADILLACS

Features of the New Models Made Public—Several Distinct Innovations Made.

If the ability to choose from a variety of machines, all constructed by his favorite manufacturer, can be considered at all as a factor for the consideration of the purchaser, then the Cadillac Motor Car Company, of Detroit, Mich., should maintain its strong hold on the public, for it is preparing to produce ten distinct and different types of car during the coming season, and all of that Cadillac quality and with those Cadillac characteristics that made those cars head the list of 1905 sellers. The 1906 line will vary in price from $750 to $5,000, and will be mounted on three different chasses rated at ten, thirty and forty horsepower respectively. In each of the models several features which are essentially Cadillac will be retained in improved form, including the independent timing of the valves, the special form of automatic carburetter, the copper water jacket and the spark plug, which latter has been used exclusively on cars of this make. On all of the cars the planetary type of transmission gearing will be used, the lower powered machines having two forward speeds, and those of thirty and forty horsepower being equipped with transmissions giving three forward speeds, in addition to the reverse.

In detail, the line will consist of a single cylinder runabout, rated at ten horsepower, a light touring car, with the same powered engine, a ten horsepower light delivery car, a car of the same power as the foregoing fitted with a novel form of folding tonneau body, and a ten horsepower coupe. Model H, so called, will be a thirty horsepower machine, fitted with a five passenger touring body, or as an option, with a runabout body. A form of coupe also will be mounted on the thirty horsepower chassis. In the forty horsepower line, two styles will be offered, namely, a touring car of roomy and excellent design, and a superlative limousine, the climax of the series.

In the smaller types of machine the single cylinder motor is used, the rating of ten horsepower given it this year being fully up to its actual ability as shown by repeated tests, and its performance in general placing it on an equal footing with other motors of the same rated output. The economical construction of the water jackets, which are without the disagreeable feature of gaskets, which might burn or blow out, and which may be replaced at slight expense in case of injury from any source, is too well known to require more than passing reference in this connection. In the construction of the motors and other working parts of the cars the Cadillac Company employs a rigid system of testing by means of limit guages, which does not permit of the passage from the plant of a part which is in any way defective or under sized, and insures absolute flexibility and interchangeability in all replacements.

The system of lubrication of the motor is one of considerable novelty, being positively fed and regulated in accordance with the engine speed. An arm, extending from the lubricator casing toward the flywheel, engages a cam, which is integral with that part, and from it receives a motion which it imparts to the force pump which circulates the lubricant. The rate of motion of the pump elements being governed by the speed of the engine, the feed is, of course, proportional to the demand for oil. Another novelty which is to be found on these machines is the safety starting device, which is nothing more complex than a little slide which is pushed over the opening, into which the starting crank is inserted, by the motion which advances the spark, and which thus prevents the crank from being applied until the spark lever has been retarded by the proper amount to insure immunity from a back kick.

The frame is of pressed steel construction, made of a special grade of stock and tested to a point far above the maximum running load. The suspension is upon three springs, two at the rear, and one in front, the latter being provided with a rocker joint which fully doubles the efficiency, and permits of great flexibility in the running gear. Artillery wheels are used, those in the rear being keyed to the live driving axle, while those in front are mounted on ball bearings. The method of control is characteristically simple, the handling of the motor being accomplished by the use of levers mounted on the steering column, while the forward speeds are controlled by a lever at the side of the car, while the reverse, and the brake, which is of large proportions and acts on the differential casing on the rear axle, are controlled by foot pedals. The gasolene capacity is seven gallons in all, including one gallon which is contained in a reserve tank, only drawn from when the main supply has become exhausted and a stop cock opened, the driver thus being guarded against running out of fuel while on the road, by automatic means.

The thirty horsepower model has a carrying capacity of five persons and runs on 32 by 4 inch tires, the wheel base being ninety-eight inches. The motor is of the four-cylinder vertical order, the cylinder dimensions being 4⅜ by 5 inches. The total weight of the machine, including the standard equipment, is 2,400 pounds. Model L, the forty horsepower car, has a 5 by 5 inch motor of four cylinders, and is mounted on a wheel base of 110 inches, the tires being 36 by 4 inches in front, and 36 by 4½ inches in the rear. Both cars are essentially similar, being designed along the same lines, and differing chiefly in the matter of power.

These machines are equipped throughout with the Hess-Bright type of ball bearing, the wheels, transmission and engine bearings being included. The transmissions are constructed in a thoroughgoing manner, all gears being cut from special stock, ground and hardened. The drive to the rear axles is by a cardan shaft, and specially hardened gears in the bevel pair. The brakes are double acting, and work on drums attached to the rear wheels, one set expanding and the other contracting upon the drums, either one being of ample power for any emergency. The spring suspensions are semi-elliptic in front and three-quarter elliptic in the rear, affording a very elastic mounting.

Among the distinctive novelties which are introduced in these cars are the commutators, which are placed horizontally on a vertical shaft, and are provided with an oil container; the carburetters, which have been worked out with especial reference to the motors, which they feed, and the bodies, which are of original and exclusive design, and appropriately drawn for the use to which they are to be put. The line is uniformly graded in character, and the elements are of sufficient variety to suit the tastes of all who buy automobiles.

Pierce to Build a Fire Engine.

Pittsburg is not the first city to adopt the chemical fire engine, by any means, but it would appear to be a pioneer in taking up the gasolene propelled vehicle for this purpose for other towns have placed their faith in steam. The machine, which will be built on a 45-horsepower Pierce chassis, with extra long wheel base, has been ordered, through the Banker Bros. Co., and it is anticipated that it will be something entirely out of the ordinary either in automobiles or fire apparatus.

It will be equipped with two 250-gallon chemical tanks, six small fire extinguishers, ladders, hose and the usual equipment of a chemical wagon, and there will be room on the footboards for ten firemen as well as the chauffeur, who will control the machine. The car will have sufficient capacity to fight small fires or to take care of the start of a big one, and one of the advantages claimed for it is its speed and the rapidity with which it can be taken anywhere. Having a speed of from forty to sixty miles an hour, such an engine could be rushed to fires in the suburban district or in the scattered resident sections of the town, where in case of a fire the building is likely to be destroyed long before horse engines and carriages can make the long run.

This machine will, if adopted by Pittsburg, create interest all over the country, for its use will interest not only the city authorities, but the insurance interests, who will see in it a new field for fire fighting and a valuable adjunct to the insurance patrols which are maintained in many cities and which are always the first at a fire.

Novelty in Headlights.

A novelty in headlight construction which has just been introduced in France is the use of an iris diaphragm at the front of the lamp by means of which the beam of light may be reduced in diameter to a very fine pencil, the mechanism being controlled from the driver's seat. By thus restricting the diameter of the beam the light is concentrated on a point far ahead of the machine and does not interfere with the vision of drivers of approaching traffic.

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NON-STOP WAS SHORT STOPPED

How Two Ambitious New Y rkers Who Went to Washington Found a "Welcome."

Two persons, at least, have learned that the officials of Washington, D. C., do not feel kindly toward non-stop automobile runs, especially if they are not consulted beforehand or asked to take a hand in the play. They are C. C. Singer and R. L. Lockwood, who went down to Washington to try out a Reo in a 1,000-mile non-stop test.

Wide, straight and asphalted Pennsylvania avenue is conducive to easy running, so with hopes high these two New Yorkers, assisted by a Washingtonian, set out on Monday, last week, to establish a 1,000-mile non-stop record, and incidentally put another feather in the Reo's bonnet. But they reckoned without their host. Early Tuesday morning Policemen Lauten and Van Horn, of the 3d precinct, were rudely awakened from their dreams, in which expected Christmas Day handouts assumed an important role, on complaint that an automobile was speeding on Pennsylvania avenue, Northwest. At the time Sergeant Hodges was watching the car near the Pease monument; Sergeant Harrison held a stop watch at the White House and Sergeant Judge stood near Washington Circle with a worried look on his face.

Lauten and Van Horn are bicycle policemen and as such are considered pretty good sprinters, so they were sent off to apprehend the nervy culprits who dared speed on Pennsylvania avenue's sacred asphalt at the uncanny hour of midnight. The cycle cops swore that although they attained a speed of thirty miles an hour they were left behind by the little car. As a last resort they lined up across the street at 15th street and Pennsylvania avenue to stop the machine on its return.

Singer was driving at the time and when he spied the line of bluecoats he realized the 1,000-miles would not be finished. He stopped.

The following day Singer was arraigned in police court before Judge Mullowny. The officers said the machine was making at least forty miles an hour. For reasons which he did not state Singer did not question the alleged speed. The 1,000-mile stopped run culminated with the payment of a fine of $30. The clerk marked the entry paid and the incident closed.

Garages on Battleships.

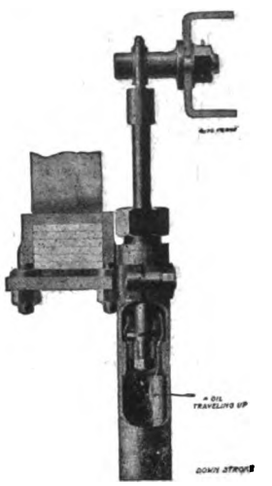
At last the English naval authorities have recognized the universal use of the automobile. The bicycle stable has long been a regular institution on board British battleships and cruisers and now the men-of-war contain motor garages.

In the flat space between the boiler-room bulkhead and the cook's galley plenty of room has been found in most warships to stack bicycles and several motor cars, and the boat derrick, which hoists out a steam pinnace, weighing fifteen tons, makes it a comparatively easy matter to land and reship the cars.

Motoring is becoming increasingly popular in the service, and it is found quite a comfort to the officers to be able to take their automobiles with them for spins on land.

Gabriel Evolves a Shock Absorber.

Having successfully devised a means of clearing the road, the Gabriel Horn Mfg. Co., Cleveland, Ohio, has undertaken to help



save the body from jolts and jars while on the road, even if the latter be rough. The bump-saving instrument is the Foster shock absorber of course, which the Horn Company is now marketing. While of the old dashpot principle, the Foster shock absorber is unique because of its simplicity and compactness. It is a small, light cylinder, made of cold drawn steel, containing the piston, which is attached to the frame. The lower part of the cylinder contains oil, and the sudden compression of the spring forces the plunger down against the oil, which acts as a spring. The plunger head contains two small valves, so that when the piston comes in contact with the oil, it forces it through these holes into the upper chamber. On the recoil the oil acts as a cushion, and the plunger retards slowly, the oil flowing back into the lower chamber a small portion at a time, thus relieving the strain for the springs. The Foster shock absorber weighs but two and one-half pounds, is adjustable in every direction and can be fitted to any car.

Tells a Tales of Crankshafts.

For those who are interested in the mechanical details of automobile building there are some excellent pointers in a pamphlet entitled "Fashioning a Crankshaft," which has just been issued by the Electric Vehicle Company, of Hartford, and will be sent free upon request. It illustrates various methods of turning out crankshafts and axles, dwelling at length upon the European method of machining crankshafts cold from solid slabs of steel, as is done for Columbia cars.

HACKLEY ADOPTS LINKWORK

Californian Brings it to Bear on Motor Cars—The Direct Drive That Results.

Although the methods most commonly employed for the connection of the motor and driving wheels of the automobile are those in which various combinations of toothed gearing are used, it does not follow that no more direct means of connection may be evolved for successful application, or that the ultimate concensus of opinion will fix upon the system of sliding gears, or the less cumbersome one of planetary gearing as the best for the purpose. As a matter of fact, there are most attractive possibilities, both in the friction drive pure and simple and in the methods of direct drive by means of linkwork, both of which are receiving their measure of attention in one quarter and another. Of the latter, the latest to come before the public is the invention of George T. Hackley, of Los Angeles, Cal., which combines the principles of two well known mechanical movements in a novel application to the purpose.

The Hackley system, which has been adopted by the Direct Drive Power Transmission Company, of Los Angeles, employs an adaptation of the link motion commonly applied to the reverse gear of locomotives and other steam engines, which is made to actuate a pair of roller clutches acting on the rear axle of the machine through lever arms. The latter principle is one which was at one time extensively used on bicycles of the Star type. As a result of the combination, a means of uniform gradation of speed and power is obtained, compassing the entire power range of the motor, and that with simple mechanism, which is not expensive to construct, and which requires little or no skill in manipulation.

In the only type of car to which the arrangement has thus far been applied, a horizontal motor is used with crankshaft placed transversely of the main axis, though the system is capable of adaptation to any type of machine. The crank shaft of the motor has two external cranks formed in it midway of the machine. To these are coupled a pair of connecting rods which are attached at their rear ends to the extremities of a pair of swinging links, which are slotted in the arc of a circle, the centre of which is at the centre of the crank shaft. The blocks which are fitted to these are connected by rods to the lever arms, which are coupled to the rear axle by means of the roller clutches.

By this means the rotary motion of the crank shaft is transformed into a reciprocating motion at the rear lever arms, which, by virtue of their arrangement, transmit a practically continuous rotary motion to the axle. The stroke of the final drive is regulated by means of the variable leverage which is obtained by shifting the link blocks

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in the slotted links. Thus, by adjusting the mechanism for a very long stroke, the maximum of speed is obtained, while by shortening the throw of the arms, the speed is correspondingly diminished with an increase in leverage and power, up to a neutral point where no motion is imparted. The reversal in the direction of the drive is obtained by altering the arrangement of the clutch dogs, causing them to take hold on the pulling, instead of on the pushing impulse, as ordinarily.

The control of the system is entirely concentrated in a secondary wheel mounted above the steering wheel, and readily manipulated. Thus, the handling of the car is reduced to its lowest terms, practically speaking, as the control of the speed is made absolutely simple and independent of the handling of any clutch or gear mechanism. Another point which should have an important bearing upon the introduction of the system is that by its construction the machine cannot roll backward while it is in the forward gear, the entire system serving as a backstop or automatic sprag arrangement, which should be of great efficiency where hill climbing is to be undertaken. The rear axle of the machine is equipped with a differential in the usual way, so that a positive drive is secured while rounding curves.

The application of link drive to motor cars is by no means new, and as each of the two movements used in this case is of well tried worth, even though the arrangement may be totally out of the ordinary, it has plenty of recommendation to entitle it to trial and possible adoption. Up to the present time the Hackley drive has not been regularly applied to any make of car, but is manufactured under patent right by the Los Angeles company.

France May Put up Tariff Bars.

According to recent cable advices the French manufacturers are becoming alarmed to such an extent at American competition and the manner in which the products of the latter are invading their territory that they have petitioned the government with a view to the passage of a bill placing a prohibitive duty on all imported motor cars. It is the story of the American bicycle all over again. It was only by making the price of the latter exorbitant by means of a high duty that the French machine was able to hold its own.

Honolulu to Set a Limit.

A cast iron ordinance to regulate the operation of automobiles in Honolulu has been presented to the Board of Supervisors and referred to the county attorney for an opinion as to its legality. Besides making speed limits of eight miles an hour in town and four miles at the crossing, it provides that no person shall run an automobile until he or she has passed an examination and been given a certificate as a chauffeur. No car is to be allowed to run on the streets at all until it has been registered with the police, except it be that of a temporary visitor.

Here's the Genuine Automobile Bonnet.

"Gone to the head" has the automobile, bonnet, chassis, wheels and tonneau, and from the interior of the modiste's head to the exterior of the cranium of any woman,



French or otherwise, with sufficient courage to don such a creation. Even the headlights are reproduced in one of these specimens of hideous aspect, either of which would be more than sufficient to counterbalance a far



stronger claim to comeliness of ensemble than is possessed by the representatives of their sex bearing these intended-to-be adornments in the accompanying sketches, which are reproduced from photographs.

Wide Tires and Good Roads

Troy, N. Y., has as a member of its Board of Supervisors a man who has the courage of his convictions. He has accordingly drawn up an ordinance providing for the use of wide tires on all wagons carrying heavy loads through the streets of that city on and after March 1, 1907. This has been pending before the ancient city's lawmakers for some time, but, blinded to the ultimate interests of the people they represent by a lack of foresight that does not permit them to look beyond the immediate present, most of the gentlemen in question have refrained from coming to the support of the ordinance. Its chief supporter is strenuously upholding it, and the arguments he brings forth are of great interest to every community in the country, for the question of good roads is universal.

One bright supervisor from a country town admitted that he was convinced that wide tires were necessary to preserve the country roads and were an actual advantage to the farmer, still he disliked to vote for a measure that imposed an involuntary tax upon his neighbor. The much greater burden of taxation imposed upon the same farmer by the failure to use wide tires evidently never struck him. It is almost superfluous to state that wide tires are road makers and narrow tires road breakers. Nor does it require any special scientific attainments or knowledge to appreciate the amount of damage a heavily loaded wagon with the ordinary sharp, narrow and rounded tires can do on the best of roads. But beside the immense saving in road maintenance brought about by the use of tires proportioned to the load to be carried, there is the further great advantage of increased hauling capacity with the same or less power. Numerous tests with the dynamometer by national and State experimental stations have proved that ordinary teams can haul 40 per cent more weight on wagons with 3-inch tires than with 2-inch. A test in Missouri showed that 3,248 pounds could be hauled as easily on 3-inch tires as 2,000 pounds on 2-inch tires.

Mention has been made times innumerable of the system by which such Continental countries of Europe as France and Germany have maintained their vast network of floor-like roads in a condition that is equalled in no other part of the world, but it is a story that will bear endless repeating, at least until it is taken to heart. Germany requires even light vehicles to have tires of a minimum width of 2½ inches, and both this and other European governments compel all road users to construct their vehicles in a manner that will impose the least possible wear on its surface. In France every market wagon and cart is a road maker. The tires are from three to ten inches wide, the average being from four to six, and the rear axle is more than a foot longer than the fore, so that the track of the rear wheels is fully one inch outside of that of the forward pair.

Mather to Head Rhode Islands.

William Penn Mather has been nominated for the presidency of the Rhode Island Automobile Club, the annual meeting of which will be held on Wednesday next. Mr. Mather is now vice-president of the club. Other nominees are as follows: For vice-president, R. Lincoln Lippitt; for secretary, Eugene M. Sawin; for treasurer, H. D. Wilcox. Governors, for three years: C. Prescott Knight, Lowell Emerson; for two years, Darwin Almy, Charles A. Read; for one year, Charles A. Russell.

The following officers have been selected to serve the Ogden (Utah) Automobile Club for the ensuing year.: President, O. J. Stilwell; vice-president, Archibald Bigelow; secretary, Dr. U. V. Withie; treasurer, Dr. F. W. Baker; captain, L. H. Becraft.

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MAY "MILK" ALL MOTORISTS

Despite State License, Pennsylvania Court Holds Local Licenses Legal—Text of the Decision.

Although Section 14 of Pennsylvania's new State automobile law, which goes into effect Monday next, explicitly states that "all acts or parts of acts inconsistent herewith are hereby repealed," it seems that Philadelphia's individual motorist mulcting system—otherwise known as the license act of 1902—is not abrogated by the legislative act of 1905. At least this is the opinion of Judges Willson, Audenried and Carr, in Common Pleas Court No. 4, in refusing to grant the injunction of the Automobile Club of Philadelphia and the Philadelphia Automobile Dealers' Association against the city authorities to restrain them from enforcing the iniquitous local ordinance requiring the display and purchase of license tags from the Bureau of Boiler Inspection.

The decision is taken to mean that all first class towns and cities throughout Pennsylvania may compel automobiles to secure licenses upon entering their sacred territory. Thus, to be allowed to travel through that State a car must be betagged and benumbered like a veritable department store many times marked down piece of goods.

Pittsburg motorists some time ago lost a similar case when they questioned the right of the city to impose a local tax on motor cars, but they took defeat stoically. Not so the residents of the Quaker City, however, for they are going to rupture time honored traditions by displaying a laudable progressiveness. Their next step will be to obtain an injunction restraining the city authorities from enforcing the new State law. Those interested will carry the case to the highest court for judgment.

In the opinion handed down by the court in Philadelphia last week the provisions of the automobile laws of 1902 and 1903 are cited, and then it goes on to say:

"It is claimed on behalf of the plaintiffs, however, that, whatever may have been the case previously, the condition of affairs was altered when the act of Assembly of April 19, 1905, came into existence. That statute enacted that no motor vehicle could be operated within the highways of the Commonwealth until the operator of the vehicle should procure a license from the State Highway Department of the Commonwealth. That department was directed to enter the application for a license in a particular book, and in a proper case to issue a license to the applicant, together with two tags exhibiting the license number and the number of the year.

"For this license, as well as for the licenses called for by the ordinance of 1902, and the act of Assembly of 1903, a fee was to be paid. It is provided in the statute that no more than one State license number should be carried upon front and back of the vehicle, and that a 'license number obtained in any other place or State shall be removed from said vehicle while the vehicle is being used within this Commonwealth.'

"In regard to the rate of speed it was enacted that 'no person or persons shall be allowed to use, operate or drive any motor vehicle on any of the public streets or public highways of the cities, boroughs, counties or townships of this Commonwealth at a speed greater than a mile in six minutes, within the corporate limits of any city or borough; while outside of the corporate limits of any city or borough the lawful rate of speed shall not exceed one mile in three minutes.'

"There was a proviso that in townships of the first class the Commissioner may by ordinance fix a rate of speed of not less than one mile in six minutes; and also that the section containing the provision as to rate of speed should not permit any person to drive an automobile faster than is reasonable, 'regarding traffic, danger of injury to property or person, at any time or at any place.'

"It is contended on the part of the automobile people that this act of 1905 must be regarded as superseding and obliterating the ordinance of 1902, and as supplying the sole method of regulating the use of automobiles within the Commonwealth. They are taxpayers within the city, and being apprehensive that the municipality in making preparation for carrying out the provisions of the ordinance for the year 1905, will be obliged to make certain expenditures of the public funds, have filed the bill in this case to prevent the public officers from taking any steps in that direction.

"It is, of course, beyond all question that if the statute and the ordinance are inconsistent, or, if the statute can fairly be regarded as intended to supplant the ordinance, the latter must give way and the statute only have effect given to it. Paramount authority of the lawmaking power of the State over the lawmaking power of the city must be conceded. The question therefore comes down to this: Is there any necessary incompatability between the statute and the ordinance, or does it sufficiently appear that the statute was intended to furnish the sole rule of conduct and regulation for the use of automobiles and similar vehicles?"

The opinion then states that the city had full power to pass the ordinance of 1902 and that this ordinance was better adapted to protect people using the streets than the act of 1905. Reference is made to the fact that under the terms of the ordinance the license to be obtained from the city is one which is based on certain examinations which the court does not regard as inconsistent with anything in the act. No satisfactory argument was presented against the right of the city to require guarantees from operators of automobiles additional to those required by the State.

"It has been argued," continued the opinion, "that the act of 1905 was intended to provide that only one license number or tag shall appear upon the front and back of the vehicle when operated on the highways, but we do not regard this to be the proper construction of the act. It is provided that only one 'State license number shall be carried upon the vehicle. There is no prohibition against the carrying of a license which was not a State license, and the limitation of the prohibition to a single class of licenses implies that it was not intended to exclude a local municipal license from being carried upon the vehicle.' As to the word 'place' used in the act, the court does not regard the term as applying to a city or municipality within the Commonwealth.

"It seems very plain," the opinion goes on to say, "that what was intended to be enacted by the clause just cited was that a foreign license number should be removed from any vehicle which comes from another territorial division outside of the State into the limits of the State. The language of the act—'while the vehicle is being used within this Commonwealth'—the court construes as meaning that the vehicle in the mind of the Legislature was one which came from outside of the State.

"It may be argued that there is an incompatibility between the statute and the ordinance in the different provisions which are contained in the two with reference to the rates of speed at which an automobile may be driven. The statute provides that no person shall be allowed to operate such a vehicle above a certain maximum speed under certain conditions. The question might arise as to what is meant by the term 'allowed,' and as to who or what authority might allow the use or operation thereof. Perhaps it would not be straining the force of language to construe this provision as referring to the constituted authority having jurisdiction over highways in any particular district. Aside from this point, however, it must be noted that the Legislature only prohibited the driving of automobiles or similar vehicles at a higher rate than the fixed maximum speed. It did not state that they might be driven at that rate, except by implication, and that implication may be regarded as having been overcome by the further provision that the prohibition against exceeding a certain maximum rate should not be construed as permitting any person to drive an automobile at a greater speed than is reasonable.

"It does not seem to us that this restriction of the force of the provision regulating the rate of speed should be regarded as applicable only to a particular case, where the question of the reasonableness of the speed might come before a jury, say, in an action for negligence. In the absence of any prohibition against local legislation it would rather seem that the Legislature intended that the local authorities having jurisdiction over such a class of subjects, and having special knowledge of the conditions of their own localities, might by ordinance determine what should be a reasonable rate of speed.

"This we believe to be a permissible construction of the statute before us, and we believe that such a construction will best pro-

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mote the interests of the various communities of the Commonwealth composed of people living in closely built towns and cities, and that no unreasonable restrictions are thereby placed upon people who desire to make use of the modern horseless vehicles, with due regard to the rights of others.

"We are unable to find in other portions of the act of 1905 anything which conflicts with the ordinance of 1902, and in view of what we have already stated we have reached the conclusion that the injunction prayed for must be refused."

Photographs Settled Perjury Case.

In a recent trial of one of the bicycle "scouts" employed by the London Automobile Association for perjury in giving testimony as a witness in defence of a car owner mulcted for overspeeding, the police witnesses were utterly refuted by means of photographs of the scene of the "trap."

The prosecution hinged entirely upon the policeman's ability to determine when an oncoming car passed a given point, and after the manner of their kind the "bobbies" took solemn oath as to the accuracy of their knowledge. When confronted with the picture they were unable to say whether a man standing in the road apparently at the spot indicated by their testimony was in reality in that position, had not yet arrived at it or had already passed it. As a matter of fact, he had passed it by thirty yards, a distance sufficient to have a marked effect upon the result of a speed calculation based upon the running of a furlong. By such methods as this the English motorist has been squeezed to the tune of $5,000,000 in the last year.

Having "Fun" With Automobilists.

New Haven (Conn.) automobilists have recently been made the victims of that now time-worn scare carried out on a poorly lighted street with the aid of a dummy figure at the end of a rope. In this instance its perpetrators have been in the habit of taking up their stand just at a point where the driver sees a chance to "let her out a bit." As the car approaches rapidly the straw man is yanked out of the darkness directly into its path, at the expense of the driver's nerves. It means an emergency stop and a hasty search for the mangled remains, while the conspirators hot foot it down some convenient alley and make good their escape.

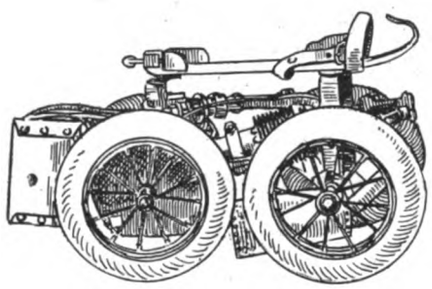
Why Holman Left Massachusetts.

"We have no 'auto-jims' here and no fresh cops to take you in for the sake of getting a little of your money," is the way in which an ardent automobilist who has disdainfully shaken the dust of Leicester, Mass., off his feet for the more peaceable vicinity of Daytona, Fla., expresses his sentiments. He is E. M. Holman, a retired jeweler, and owing to the treatment he and other automobilists have received at the hands of the local "cornstubbles" and tare gatherers, has sworn that he would not buy so much as a burial lot anywhere near that town. He is making it good by taking up a permanent residence in a more congenial clime.

Here's that Motor Skate.

So many conflicting reports have been circulated, and so much has been said of the "motor road skate," that has been drawn from the imagination, that many were inclined to discredit the whole story as a fabrication, and such a view was more than justified by some of the forms in which the story has made its appearance from time to time.

But the motor skate is a reality, after all. It is said to be the invention of a Swiss engineer, and is now actually on the market, samples of it being shown at the recent Salon in Paris. It consists of a small air-cooled gasolene motor, power not given, mounted upon a miniature chassis running on four wire-spoked, rubber-tired wheels, as may be seen from the accompanying sketch, drawn from a photograph. The motor is coupled



direct to the rear axle which carries the driving wheels, and lies almost horizontally under the foot of the wearer. As it is of the inside flywheel type familiar on motorcycles, it has few exposed moving parts. The exhaust is carried through a curved outlet from the valve to a muffler that is almost as large as the engine, lying parallel beneath and barely clearing the road. Ignition is by means of the usual battery and ordinary trembler coil, mounted on the chassis itself, while the fuel supply is carried in a tank belted to the waist of the passenger. The front pair of wheels is mounted on a small bogey truck in order to enable the wearer to steer a course, though just how control of a pair of these loose and ordinarily wabbly trucks is maintained, and why they do not turn at right angles and contribute toward sending the skater to the far beyond is not apparent. A speed of 25 miles an hour is claimed for the device on a level road, but no mention is made of how expert a foot-chauffeur the wearer should be to attain this. These self-propelling skates are being placed on the market at $120 per pair.

Both Speeding and Loitering Prohibited.

They bring things down to a fine point in Metuchen, N. J. Signs which hang on the outskirts of the borough bear the following inscription:

"Borough of Metuchen.
"Motor Vehicles.
"Speed Limit:
"1 mile—7 minutes.
"No begging or loitering allowed."

Dust Leads to Odd Suit and Verdict.

What is deemed to be a "somewhat remarkable case" by the foreign press has just been decided by a Paris court. On May 1 of the present year an automobile passed a cyclist on the road between Paris and Melun. The motor car raised so dense a cloud of dust that the cyclist, who was completely enveloped in it, became confused, swerved across the road into the path of an oncoming car and was killed.

Actions were instituted against the drivers of both cars, the one that had actually done the damage and the one that had indirectly been the cause of it. The verdict was a fine of $200 and compensation to the amount of $600 to the relatives of the deceased. The driver of the first car was not only relieved of any responsibility for the accident, but a claim of $40 for malicious prosecution in his favor was allowed.

How the Horse Increases.

Many are the predictions of the passing of the horse, but there is one authority who openly declares it to be his opinion that the greater the number of automobiles the greater will be the number of horses. He is M. Lavaillard, one of the directors of a Paris omnibus company, and his contention is that successive inventions, such as the railway, have led to the transformation of the horse—not to his disappearance. He showed that since the opening of the Paris subway the Compagnie Generale des Omnibus has purchased 3,000 more horses, and that whereas there were in France 5,386 automobiles and a little more than 3,000,000 horses in 1904, the figures increased in 1905 to 17,704 automobiles and 4,228,000 horses.

Sued for Damage to Highways.

Probably the most unique bit of litigation growing out of the use of the automobile takes the form of an action brought against an express company in England for what is alleged to be "extraordinary traffic damage to the roads caused by the defendant's motors." Upon consideration it will be seen that the adverse decision of such a case would open the way to endless litigation aimed at all users of commercial vehicles. It is thought to be a question of such moment to the industry in the "tight little isle" that the Society of Motor Manufacturer and Traders has appropriated $250 to defend the action.

Even Elephants Are Being Eliminated.

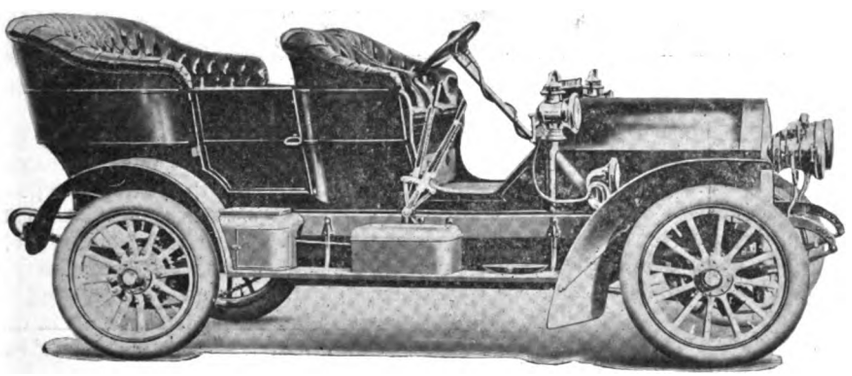
There are few things which the automobile is not credited with having displaced, and if a list of those that it has done away with is ever compiled it will include the rather incongruous item of "elephants." Instead of travelling about in the gaudily caparisoned howdah, perched on the back of one of these mountains of flesh, the native East Indian of rank now affects the motor car. And his wealth is such in many instances that the European must perforce take a back seat. Most of the high priced and ultra fashionable cars are the property of the native princes.

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ABOUT THE NEW KNOXES

Famous Air Cooled Cars Now Right Up to Date—Full of Style and New Features.

Up to the present time cars driven by air cooled motors have been in a class by themselves in more senses than one. They have been distinguishable by an appearance totally at variance with machines of the commoner type—a thing which, although placing them in the class of the unusual, has served the



KNOX TOURING CAR.

more to emphasize the excellence of their performance on that very account. To many purchasers, however, this very fact would serve as a deterrent from investing in a machine which otherwise would be wholly to their liking, so that, all things considered, the Model G, Knox car, with front vertical motor, rated at 35-40 horsepower, capping the climax of an efficient lineage, yet comparable in power and mounting with any of the more conventional machines, should prove a good venture for the Knox Automobile Co., of Springfield, Mass., and a good and safe investment for the purchaser.

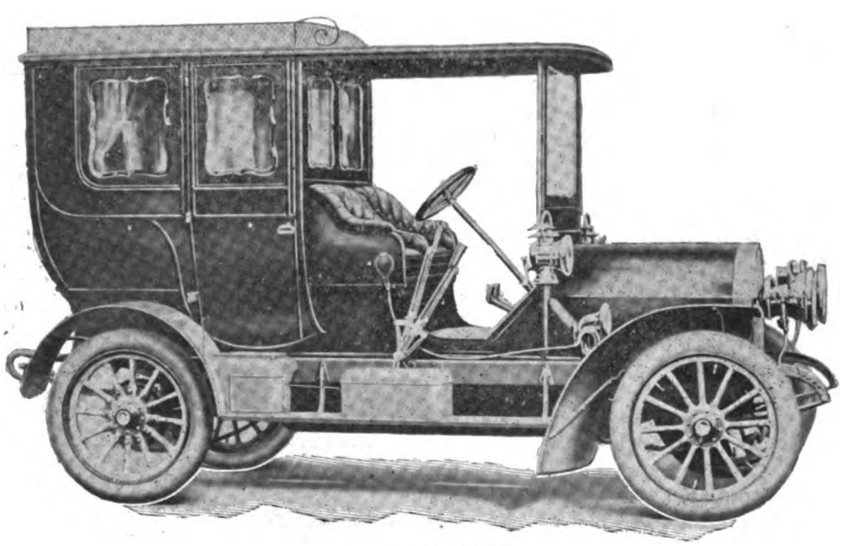
Model G is signalized first of all by the fact that it is the first air cooled car of high power to be produced as a regular stock model, and, second, by the fact that it is constructed along the general lines which have been adopted for water cooled cars of standard type, the details having been worked out with characteristic thoroughness and the entire fabric made in a manner which is authorized by good and established precedent in the industry. The cylinder dimensions are 4¾ by 5½ inches. The cylinders are cast separately, and are fitted with the system of radial grooved pins for extended radiating surface, which is a feature of all Knox machines. The air circulating fan, which completes the cooling system, is mounted at the forward end of the motor, and is driven by a belt from the crank shaft.

The valves, which are interchangeable, are mounted in the heads of the cylinders, and are actuated by short walking beams mounted on the heads, which, in turn, are actuated by push rods driven from cam shafts running in a compartment of the crank case upon either side. A notable feature in the valve construction is that the valves are mounted in cages, which are removable by the relaxation of a single nut in each case, by which means both the valve and its cage may be lifted clear of the engine for inspection or grinding. This removal of the valves may be accomplished without the disturbance of either inlet or exhaust connections, and, of course, without interfering with the timing or other adjustment of the mechanism. The cam shafts are entirely enclosed, and are driven from the crank shaft by heavy gears running steel to bronze. The crank shaft, which is made of nickel steel, cut from the solid slab, runs in five liberal bearings in an aluminum case, which is so arranged that the lower half may be removed for purposes of inspection without disturbing the adjustment of the bearings. Four of these bearings are 2⅞ inches in length, while the fifth, which is at the rear end of the motor, is 4 inches long. The wrist pins are tubular and afford a 1¾ inch bearing for the connecting rods. The connecting rod bearings themselves are of the marine type, bronze bushed.

The jump spark system of ignition is used with a high tension magneto generator, which is directly driven from the inlet cam shaft. A thoroughly modern type of instrument is installed having separate coil and high tension distributor mounted in the case. An auxiliary dry battery is carried as a standby and for use in starting the motor on occasion.

The clutch which connects the engine with the transmission is of the cone type, fully enclosed, and running in oil. Unlike most members of its class, it is without the common leather facing, working metal to metal. On this account it is absolutely free from the drawback of fierce engagement which characterizes many devices of its type, furnishing, on the contrary, an absolutely "sweet" engagement under all circumstances. The amount of oil used is very slight, and the device requires a minimum of attention. The transmission is of the sliding gear type, running in ball bearings, and adapted to yield a direct connection on the highest gear with no pinions in mesh. Other merits of the mechanism are that the shafts are so short as to preclude all possibility of their springing when running on the lower gears, and that the use of one bearing riding within another, which is found in many transmissions, is avoided, thereby eliminating a feature which introduces numerous complications.

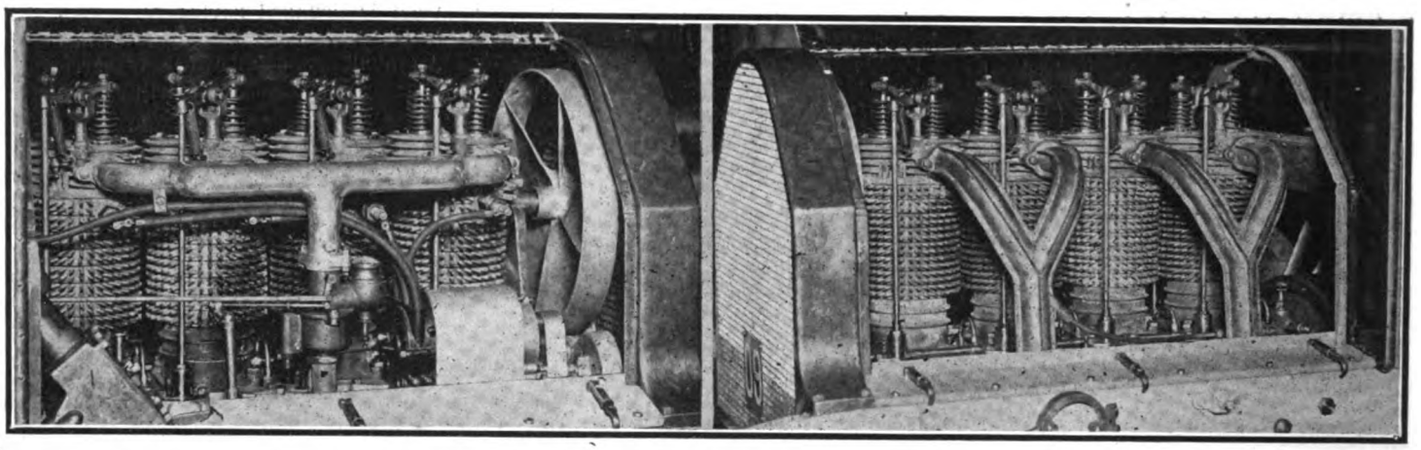
As shown in the accompanying illustration,



KNOX LIMOUSINE.

the distribution of the turning effort, of the motor is accomplished by means of a driving and lay shaft mounted side by side in Hess-Bright bearings of the automatic type. The rear bearing of the driving shaft, P, is bolted to the bottom of the case, and also is stayed to the rear of the case by means of the arm, O, which bridges over the countershaft. The sliding member carrying the gears, C and D, is splined to the shaft, A, by means of four heavy keys. In successive position it meshes with gears, F and G, for the first and second forward speeds. By meshing E and H, the third speed is obtained, the drive up to this point being through the lay shaft and the bevel gears, J and E, the latter being mounted on the

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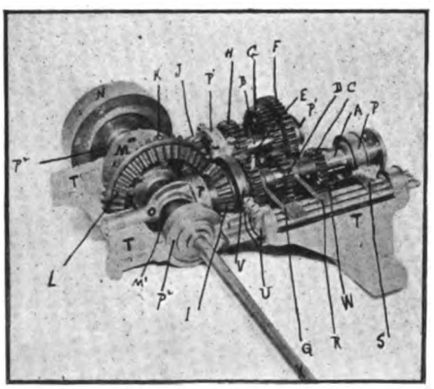
INLET SIDE. —KNOX MOTOR.— EXHAUST SIDE.

differential casing. For the fourth speed, or direct drive, the gear, E, is slipped into an internal gear, V, which is made integral with the bevel pinion, I, meshing with the second bevel gear, L, on the differential. With this connection the gears of the lay shaft are out of mesh, and in consequence it rotates idly in its bearings. The pinion, I-V, is mounted upon the shaft, A, in ball bearings, and when not in use revolves freely with little or no load upon the shaft. The reverse movement is obtained by sliding the reverse idler, W, backward in the case until it meshes at once with gears C and F.

The shifting bars which operate the gears are moved at the proper time by a single lever at the side of the car, which slides through a gridiron segment, fitted with a gate as a guard for the reverse. The shafts are all made of a special grade of nickel carbon steel, having a tensile strength of 120,000 pounds per square inch, while the gears are of a nickel chrome alloy, having a tensile strength of 175,000 pounds per square inch. The gear case is of cast aluminum, divided at the centre, and having a liberal inspection port in the top.

The running gear is of equally modern construction with the power plant, consisting of 34-inch wheels, shod with 4-inch tires in front and 4½-inch tires in the rear, the wheel base being 112 inches, and the tread standard. The axles are of I-beam construction, made of special steel testing 120,000 pounds tensile, and the steering pivots and levers are forged from the same material. The frame is of high grade pressed steel, tapered in section toward each end, and of the same width throughout. The spring horns are hand forged from the same grade of steel which is used for the axles. The spring suspension is characteristically easy, consisting of semi-elliptic elements, the front members being 42 inches long, and those in the rear being 54 inches in length. All springs are 2 inches in width. The mud guards are of liberal proportions, those in front being of the plough-share variety, both sets connecting with the running board at the side of the machine. The brakes on the rear wheels are of the internal expansion order, while a large drum, N, mounted on the counter shaft, and actuated by a push pedal, is of the external type. The control of the machine is accomplished by means of spark and gas levers mounted at the top of the steering column, and also by a foot accelerator. In addition to the action of the brakes, the motor throttle is so arranged that the compression may be used in retarding the car at the will of the operator, thus saving the wear and tear of the brakes.

In the design of the car, matters pertaining to the working out of such details as the length, diameter and spacing of the radiating pins, and the speed and pitch of the fan,



KNOX TRANSMISSION.

have been worked out with the greatest of care, and so fine has the development of the system been made, that the amount of power consumed in driving the latter auxiliary is but little more than that required to drive the circulating pump of a water cooled machine. In all other respects also, including the carburation, which is completely automatic, and the lubrication, in which the system of continuous circulation of oil through all the engine bearings by means of a pump, the amount of feed being indicated by a gauge upon the dash, has been adopted, the greatest of pains have been taken to produce a perfectly efficient motor car.

Elimination of Ignition Push Rods.

One of the drawbacks attendant upon employment of the make and break system of ignition for the high speed engine was the excessive momentum and inertia of the push rods actuating the hammer mechanism unless their weight was reduced to a point that at the outset did not appear practical. This has, however, been satisfactorily overcome by the use of rods needle-like in thinness and weight, but of a steel calculated to withstand any strain imposed upon it in this role. Now the designers of the Richard-Brasier cars have swept away the rods altogether, and with them the problem attendant on their use. The ignition cam shaft has been raised from its customary location at the level of the top of the crank case, to the top of the cylinders and above the ignitors themselves. This is driven by a small vertical shaft and bevel gearing and actuates the ignitors by means of small face cams; a modification of design that eliminates quite a number of small parts. Provision is made for automatically retarding the ignition when starting, although normally the timing is fixed.

Peculiarities of Pognon's Plug.

Automatic regulation of the sparking gap is an advantage claimed for the 1906 model of the Pognon sparking plug. Normally, which means when the points are cool—only a distance of four millimetres separates the points, but as the engine heats up the central rod carrying one of the platinum terminals expands in length from the centre of the plug and carries its point away from its fellow on the body of the plug, the amount of expansion permitted just being sufficient to cause the formation of the proper gap for the spark when the magneto is running at full speed.

For this reason it is claimed to be the plug par excellence for starting directly on the magneto. The porcelain of this plug is in three pieces, forming air chambers and passages all around the conductor, which touches the blocks only at the outer end through a fitted ring, and between the inner and centre block by means of another ring or distance disk. No cement is used in its construction, so that it may be readily dismounted.

Advent of the "Motician."

"Motician" is the newest product of word coinage. It comes from abroad, and is designed to describe an automobile engineer.

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PORTO RICO'S STAGE LINE

Where Three Motor 'Busses have Replaced 33 Coaches—How Success was Achieved.

"Our actual service experience has been remarkable in a country which knows not machinery, and where the nearest repair shop is 1,500 miles away, and it takes three weeks to replace a broken part if it happens to be something you do not have on hand," says C. W. Martin, who has completed a year's operation of automobiles as common carriers between Camuy and Aguadilla, Porto Rico, a gap in the American Railroad, in telling of his experiences with the automobile in that country.

"We have been operating a stage line in the western part of Porto Rico. The distance covered is fifty-four miles (twenty-seven miles each way), completing a gap in the railroad over a section of country so rough and hilly that the great expense has prevented the American railroad from building its line here.

"Our work is to take passengers, baggage and mail from the northern railroad terminus to the southern and bring back whatever may be at the southern terminus. For this we have five hours and twenty minutes when the trains are on time (which is not always the case). We have been running now just one year without missing a single day and have carried 7,422 passengers. Not a passenger has been hurt in any way and not a domestic animal killed except one too inquisitive pig and a few dogs.

"I should like to know if there is a railroad or trolley line that can show a better record for safety and reliability?

"We have four machines, three used for passengers and mail service and one as a 'hospital car.' Two of the cars for passenger service are 8-horsepower machines, with a seating capacity each of eight and the operator, and the third is a 20-horsepower, double opposed motor, fitted with a body designed to carry fourteen passengers and operator.

"The 'hospital machine' is always kept loaded with parts and tools so that if we receive a wire that something is wrong the 'ambulance' is on the road within a minute or two after the telegram is received. It is geared pretty high and generally needs very little time to reach the cripple. Then if the trouble means an hour's work or more, passengers and mail are transferred to the 'hospital wagon,' which continues the trip, and 'Mr. Cripple' has his wounds healed right there in the road.

"Only once have we had to call on outside assistance, and that was when a crank shaft broke. Not having an extra one, we had to have the help of a team or friendly oxen. Every other machine has come in on its own power. We have had troubles and many of them, but it is not to be wondered at, as we are compelled some days to carry very much more weight than the machines are built to carry.

"One day the two eight-passenger cars were loaded to their fullest capacity and the fourteen-passenger machine with nineteen crowded into it, was drawing a trailer weighing a thousand pounds empty and loaded with fifteen hundred pounds of baggage and mail. When machines have such a strain put on them it is not surprising that parts sometimes give way.

"For a part of the way our road is very bad, and we bounce over ruts and boulders and plough through deep sand; then we have long, steep hills to climb which intensifies the strain, and the vibration, caused by using solid tires, crystallizes the axles, and they break. That trouble we have overcome by having straight two-inch axles made.

"We are three weeks from the factory, so it is often necessary to make sight draft on our ingenuity. Once the lower leaf of a spring gave way and it was impossible to proceed without fixing it. We had no rope or twine at hand, were at our most distant point from a telegraph station and had a load of passengers for the steamer that sailed next day from San Juan for the States. A crowd of natives was soon about us, and one, seeing our trouble, darted into the woods and returned in a few minutes with a vine that they use as rope. So we bound up the spring with the vine and caught the train.

"The wet battery, broken spark plug, stopped up carburettor, etc., are troubles every automobilist has, and I will not dwell on them.

"Once we burned the babbitt out of a connecting rod, owing to neglect to set up the grease cap that lubricates it. The chauffeur was certainly 'up a tree' until a passenger asked if he had ever tried leather for a bearing. Besides being a new idea, there was no leather, but since it was necessary to do something the driver cut the soles from his shoes and fitted the leather into the connecting rod. It brought the machine in in time for the train, but I do not recommend the use of leather in place of babbitt.

"We have some difficulty to secure intelligent help. I brought two men down from the factory, but through one's taking another position I was left with only one man who thoroughly understood the machine. We have taught several of the natives and two Americans, however, and now have five good men.

"Our engines are cooled by threaded pins screwed into the cylinder enough to allow thirty-two inches of radiating surface to one inch surface inside the cylinder. With this system we can take the long, hard grades with a full load without overheating, and I think have settled for all time that even in the hottest weather, such as we have here all the year, the air cooled engine is not only 'as good,' but much better than water cooled.

"When we started our line there were thirty-two coaches, each seating three people besides the driver, to do the work our machines are doing. I say 'to do the work,' but I should say to do half the work, as the travel has more than doubled since we started giving so much quicker service. The coaches died hard; they cut their price in half, and, of course, got some business, but they have all left the route now except three. These three have some business, as there are still some people afraid of the automobile.

"In the beginning we tried to keep an accurate account of the total cost per mile with each machine, but the men found it too much of a problem to keep things straight, so we can only make an average estimate. Taking the cost of all gasolene, tires and parts used and making a fair estimate of the depreciation in machines and then dividing this total by the mileage we figure the cost to have been about 5¼ cents a mile, exclusive of the chauffeur's wages. In the States it would be at least 1½ cents less, on account of cheaper gasolene, no cablegrams and no excessive express charges.

"In the face of all our competition, our troubles early in the game and the natives' fear of the machines, we will this year pay a dividend of 25 per cent. We have increased our holdings, extra parts and tools, etc., about 40 per cent., and have no kick coming on the automobile as a commercial vehicle."

Motor Bus's Revolutionizing Influence.

"It has achieved success, both financial and mechanical," says the Motor Car Journal, speaking of the London motor 'bus, "and the popular penny form of automobiling has accordingly become ubiquitous," it adds. There are few fields now left for it to conquer, for it is being chartered for theatre parties and the like, and—say it with all due solemnity—it has invaded the sacred precincts of Windsor Castle. It has also been requisitioned to convey the King's bodyguard from the barracks to the castle. It is responsible for something akin to a revolution in the fares in London, for to the coming of the motor vehicle must be ascribed the sweeping reductions made by railways and 'bus companies alike during the last month.

The celerity with which the motor 'bus takes people across and through the metropolis is only comparable to the quickening of transportation facilities that followed the introduction of the steam railroad many years ago. The extent to which London is being awakened from its century old sleep may be realized from the fact that one company already operating 100 vehicles has no less than 700 more on order, all of which are to be delivered within the next few months. London, it may be added, is poor in trolley lines.

When Accidents Usually Occur.

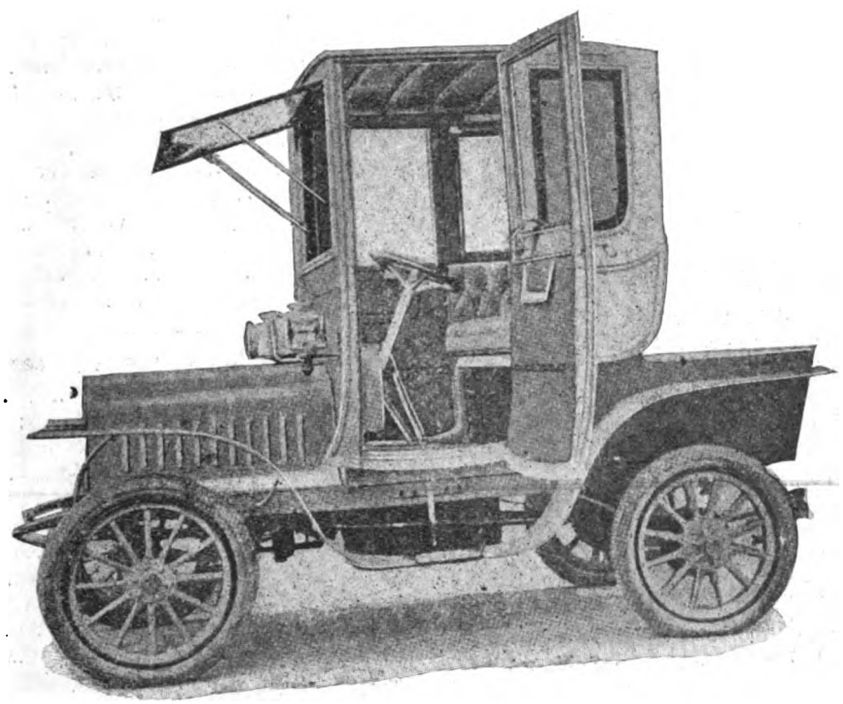
"Did you ever notice," remarked an observant motorist the other day, "that practically all of these accidents in which visits to country clubs or roadhouses cut a figure occur on the return journies? How many have you heard of that happened on the outgoing trips?"

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DEPARTURE IN CLOSED CARS

Affording the Man of Limited Means a Car of that Type—Its Many Features.

Of the many types of closed bodies that have been devised to meet the demand for an all year car none would appear to combine comfort and convenience to the extent that has been attained in the Fouillaron doctor's coupé, recently introduced in France and pictured here. The engine is an 8-horsepower De Dion of the usual type, and is mounted on the pressed steel frame, in accordance with current practice, the remainder of the mechanism conforming to customary standards, with the exception of the Fouillaron change speed gear. The drive is through a clutch to a pulley connected to a second one by a combination chain belt of peculiar construction. Each pulley is formed of two laminated jointless cones, the arms of which are so intertwined that the inner end of each cone penetrates the interior of the other. The bottom of the pulley is represented by the circumference limiting the intersection of the two cones opposed to each other. One of these cones is movable, and can by sliding along the shaft penetrate more or less into the stationary laminated cone, and thus modify the diameter of the bed upon which the belt rests. A lever connected to a non-reversible driving mechanism enables one of the cones of each of the pulleys to slide along simultaneously, but in the opposite direction.



This movement causes a variation in the diameter of the pulleys without modifying the tension of the chain, and enables the entire gamut of speeds, ranging from a gear equal to five miles an hour up to one giving twenty-eight miles an hour, to be obtained. A spring, the tension of which may be safely regulated while the car is running, is inserted in the driving gear, and tends to augment at the same time the diameter of the two pulleys. It automatically takes up all play that might be set up by centrifugal force at high speeds, and prevents slipping of the belt. The latter consists of a series of links or blocks of chrome dressed leather, mounted on a chain of case hardened steel. The shaft upon which the second pulley is mounted is connected with the rear live axle by means of a cardan shaft in the usual manner. The speed may be varied without disengaging the gear, which enables practical advantage to be taken of all the speeds comprised between the limits available.

But it is more to the body than to the mechanism that attention should be directed, for it may be said to represent an achievement in the way of two prime attributes—comfort and convenience—that has seldom been attained, particularly in the small car. With a movable front shield and ample sized windows, it is to all intents and purposes an open car, and with these protectors in place it is closed in a manner that means the minimum waste of space and places everything at hand and under cover.

For Quick-Drying Finishes.

"Automobile painting and finishing at the present time is of the frenzied order—a sort of paint them while you wait style—and to meet this demand the automobile painter must either buy a quicker drying roughstuff than he has been accustomed to or make one as occasion demands," says the Carriage Monthly. "And on the whole, for this particular class of work, the practice of shop mixing the stuff is probably the more satisfactory, for the present at least. For an especially quick stuff suited to needs of work scheduled for a more than ordinarily rapid finish, use five pounds of any American filler of repute to three pounds of white keg lead. With equal parts of quick rubbing varnish and pale drying japan, mix this filler and lead to a paste sufficiently thick to hold upright a mixing paddle thrust into its centre. Then reduce to a thorough brushing consistency with turpentine. Three coats of this material may be safely applied every twenty-four hours, or a coat every eight hours.

"For a two-coat per day roughstuff, mix equal parts of the filler and lead, by weight, as above advised. This brings into the composition a slightly larger quantity of the oil lead, but still leaves the mixture an exceedingly quick drying one.

"In mixing these quick roughstuffs it is the better plan to mix to meet the daily demand. It insures a freer working and a surer drying material, and results in a saving of stock, because of all paint shop supplies the roughstuff supply, by reason of its mussy, pasty nature, suffers the greater loss when mixed ahead of requirements. And in quick work, such as we have above pointed out, the freshly prepared surfacing pigment that dries rapidly through and through is all important. A substantial aid to the quick drying of roughstuff consists in laying first one coat with a horizontal stroke of the brush and the second one with vertical strokes. This is an oldtime practice, but it insures uniformity of application, and therefore celerity in drying."

Now the Quick Detachable Tire Lug.

Detachability is the watchword of the tire-maker at the moment, and from present indications it would appear certain that he must make it his guiding star henceforth. In the majority of instances the lug has been discarded forthwith, but the English Dunlop company has set up a halfway mark by the introduction of a quickly detachable lug.

The tapped socket, into which this necessary but exasperating accessory of tire fastening usually screws, is split into four parts instead of being solid. These four parts are, of course, fast to a ring at their lower ends, and are supplemented by a thumbscrew slipping over them. By running the latter down to the end they may be spread apart, and thus permit of the screw being seated without turning. The thumbscrew is then brought down, closing the divided thread upon the thread of the bolt, so that it may be tightened up. It would appear to be but a halfway measure at best.

Toy miniature replicas of the modern motor car are nothing if not up to date. The latest addition is a full grown crank adorning the front of the bonnet, the same as on any man sized car. Here the resemblance ends, however, for at its hidden end the crank terminates in nothing more dangerous than a large ratchet, which produces a most soul-satisfying noise when the crank is "wound." It would indeed be an unimaginative juvenile owner who would forego this preliminary before taking his seat at the wheel.

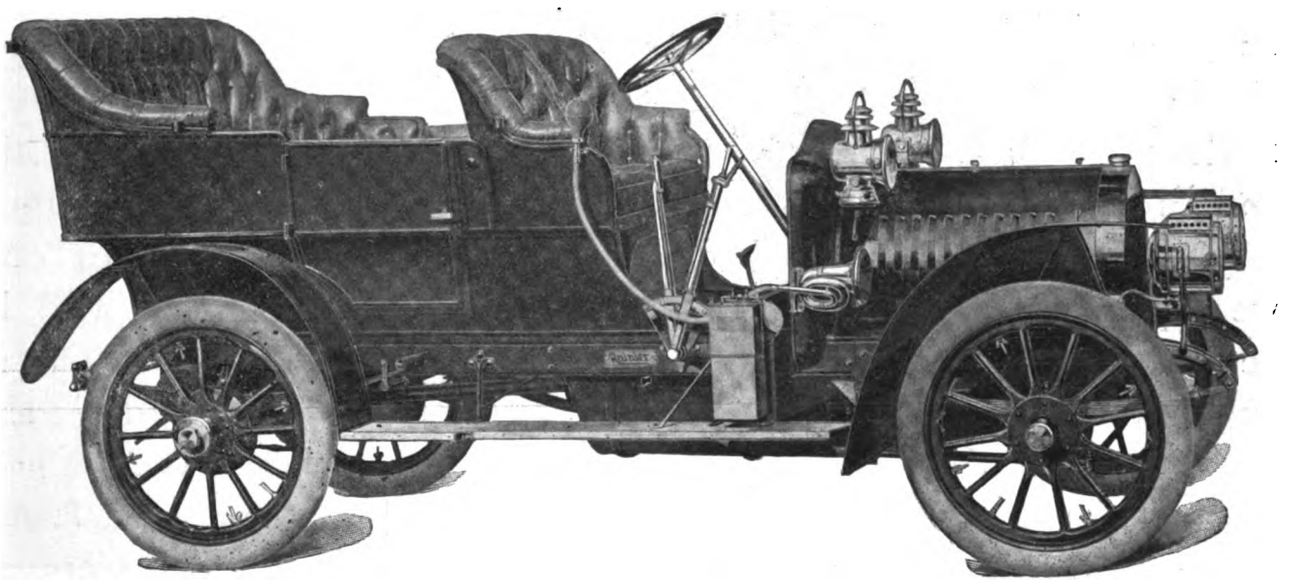
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THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

Absolutely the highest grade motor car built in this country, bar none, and the only car that can consistently compete with foreign machines. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. New style make and break spark. Simms-Bosch Magneto, Bevel gear drive. Very large and roomy full aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order.

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Boston Agents: MORRISON-TYLER MOTOR CO.

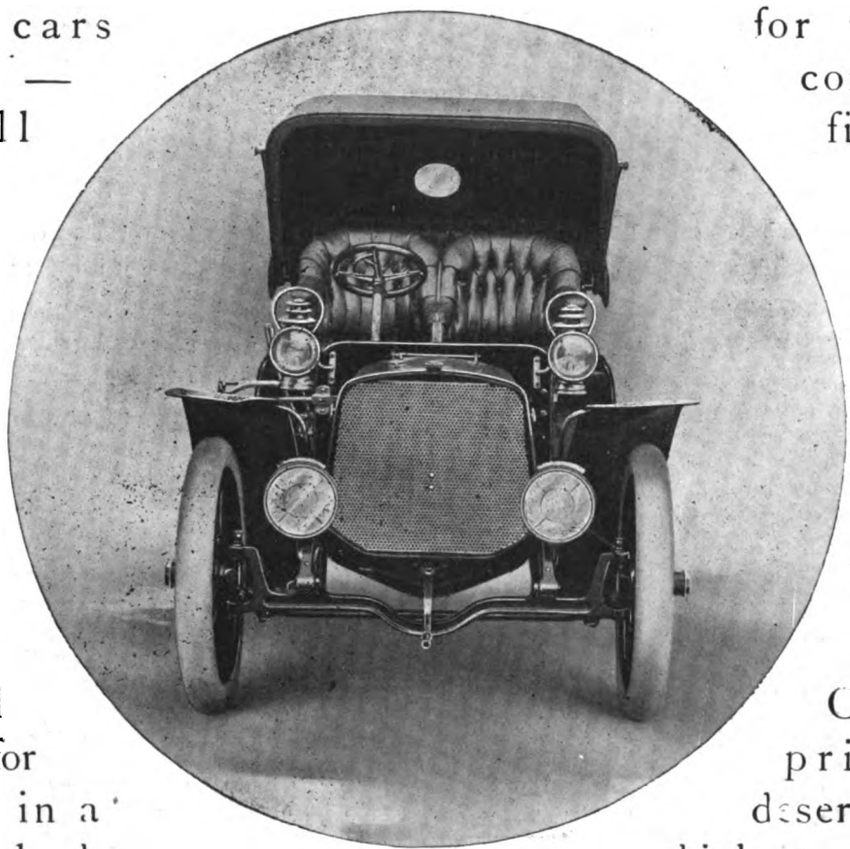
Good Agents wanted in unassigned territory.

We shall exhibit at the Armory Show in New York.

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A GOOD FRONT

We believe in putting up a good front, and our cars show it — as it will also be shown in our New Building at Fifty-fifth St. and Broadway, which we hope will be ready for occupancy in a few days, and where we will have a continuous plate glass corner front, permitting LOZIER MOTOR CARS to be shown to the best possible advantage. And they will stand all the light that can be thrown upon them, for their fine construction, finish and equipment is such as invites the very closest inspection. The Lozier Car is the very largest American Car, and in price it is deservedly the highest. We are now delivering Limousines, Landaulets and Touring Cars, 35 Horsepower, Type C, 1906 Model, and every owner of a LOZIER MOTOR CAR is one of experience who has at last found the ideal in our product.



THE LOZIER MOTOR COMPANY

Temporary Quarters at R. M. Stiver's Carriage Rooms, 19 W. 62nd St., New York City

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SEEKING THE LIMIT OF POWER

Some of the Many Questions Involved in the Effort to Check the Wastage.

The reactions that take place in the cylinder of an internal combustion motor are naturally more complex than those which result from the use of steam, for in the case of the latter only the simple processes of expansion have to be considered, and these have long been well known. While a complete exposition of the fundamental theory of the steam engine is a matter of many years' standing, there are still unsolved problems regarding the action of the explosion motor, particularly from the theoretical point of view.

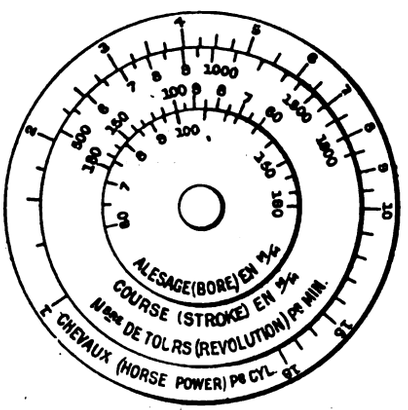
The ultimate question is naturally, What is the greatest amount of energy that can be generated by the phenomena of combustion of the gaseous mixture when utilized under the best possible conditions? And this is something that modern theoretical chemistry has solved upon principle at least from every point of view, and practically so far as concerns the majority of important chemical reactions, to a degree more or less accurate. The influences of dissociation have been exaggerated, and it may now be said to a certainty that in practice the temperature of the explosion is but slightly affected by dissociation, this being determined by the specific heat of the products of combustion. It is a well known fact that internal combustion motors furnish notably less energy than should be obtainable from them under theoretically perfect conditions, contrary to the case of the steam engine. The speed with which the explosion is propagated is prodigious; combustion proceeds in longitudinal waves, attaining in the case of a mixture of gasolene and air a speed of 5,525 feet per second, with acetylene 9,100 feet and with hydrogen 9,360 feet per second. In a paper read before the German Union of Engineers in Berlin recently Nernst states the following conclusions, which he arrives at through extended observation:

First, the maximum amount of work that can be obtained from the combustion of a certain substance is exactly calculable in simple cases, and in others can only be approximated more or less accurately. Second, the maximum pressure developed in the explosion of a mass of confined gas has been accurately ascertained experimentally by a number of observers, and in the same way they have calculated the theoretical loss of heat at high temperatures as well as the specific heats produced by various carburetted mixtures. In the case of high temperatures the pressures observed agreed closely with those calculated theoretically, chiefly through the knowledge of the movements of the waves set up in the burned gases.

At the maximum temperature of the explosion there is established as a natural result of the great rapidity of the reaction set up an almost complete chemical equilibrium, and there is in particular at high temperatures the formation of instable products such as ozone, oxygenated water and nitrogen. The propagation of combustion in the confined mixture of gas is produced in part by thermic conduction in the same manner as in the case of slow combustion and in part purely hydrodynamically through spontaneous combustion following the propagation of a high pressure from the strong waves of compression (Berthelot's explosion waves). In mixtures susceptible of sufficiently rapid combustion, the slow burning is transformed into explosion waves of greater or less length. The formation of these explosion waves may be accelerated by the reflection of the waves of compression and also by encountering obstacles.

Ready Reckoner of Horse Power.

Endless as have been the explanations of simple methods of figuring horsepower, not



to take into account the numerous erudite dissertations on the same subject, it is very much to be doubted if the average layman is one whit better off in this respect than he was before some innocent member of his fraternity precipitated this mass of opaque informative matter upon his head by asking questions. A Frenchman has taken account of this and devised a rapid, vest pocket calculator which will do the trick for the veriest tyro while he waits.

This rapid, pocket calculator consists of three discs, the two small ones being mounted concentrically on the larger; the central or innermost disc may be rotated freely, but the outer ones maintain a certain rigid, relative position. The smaller disc carries at its outer edge a series of figures representing the cylinder bore in millimetres. The middle disc has two rows of figures, those on the inner circle representing the stroke in millimetre and on the outer the revolutions per minute. The figures on the large disc give the result in horsepower. The accompanying illustration pictures the instrument life size.

The simplicity of its working may be understood from the following example: Taking an engine with a bore and stroke of 100 millimetres (3.9 inches), the figures 100 on the two inner discs are brought opposite one another, the position at which they are shown in the accompanying illustration. The horsepower will now depend entirely on the speed; at 1,000 r. p. m. this will be approximately 4 1-2, and at 1,500, 6 1-2, or at 1,800, 8-horsepower. The total output of the engine is then readily ascertained by multiplying this figure by the number of cylinders. The instrument is said to be fairly accurate for anything over 2 inches bore, its calibration not being sufficiently refined for the high speeds at which smaller engines run.

RETURN OF BOTTLE GREEN

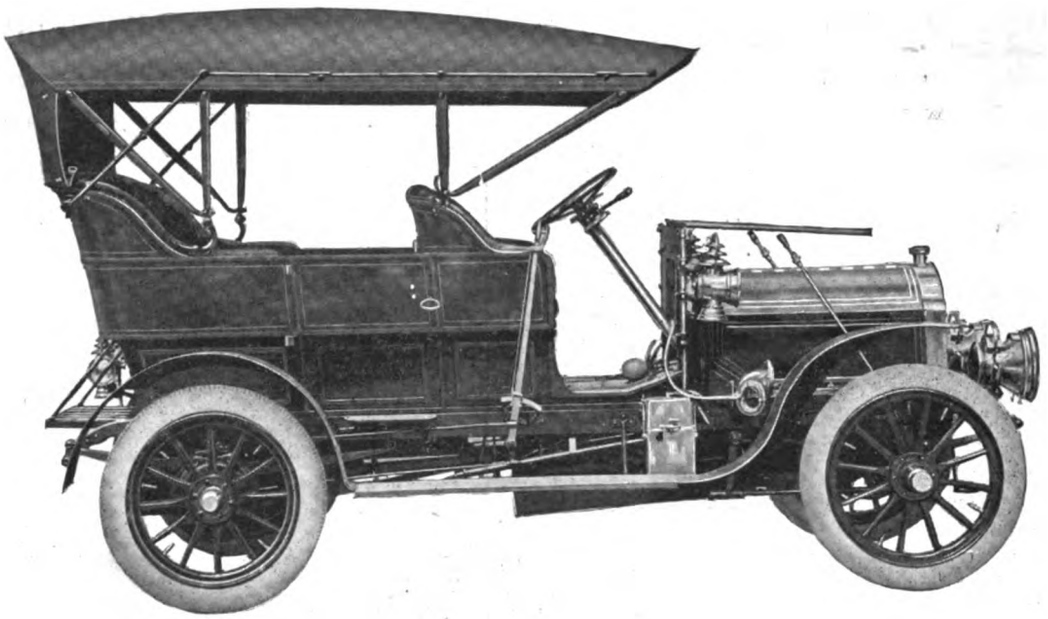
Once Fashionable Finish Due to Receive Renewed Favor—How it is Made and Applied.

Time was when bottle green passed among drivers as a strictly fashionable color, and, of all the greens, the handsomest. Other greens, less beautiful, but with more aristocratic titles, came into the field, and, to a very great extent, crowded the staid and brilliant old member of the family into oblivion. However, we are again hearing no small stir concerning this lovely color, and along speedways and swell avenues this coming season we may expect to see much of it upon the heavy pleasure vehicles, says the Hub.

In early French coach painting days it was the practice in painting bottle green to first apply a coat of lampblack, and then over this ground to apply successive coats of varnish until the desired shade of green was obtained. This method, however, was not the production of a true bottle green, such as the American carriage painter was able years later to obtain. For the benefit of readers who may wish to paint bottle green surfaces in the near future we advice the following system:

Prepare the ground color as carefully as possible, bringing the surface up from the priming coat with exceeding skill, so that no defects may interfere to mar the finished product. Over a surface thus made up add lemon chrome yellow to ivory black until a shade approximating bottle green is reached. Exact quantities cannot be given, owing to the variation existing in the strength of the two pigments as obtained from different manufacturers, hence it is a matter somewhat of color perception on the part of the mixer in striking for the shade of green desired. Whip this color up nicely and thin with turpentine. Apply to the surface with a camel's hair brush. The day following take a small quantity of Dutch pink, and add to it, sparingly, Prussian blue until a rich shade of bottle green is reached. We use the word sparingly because Prussian blue has the coloring strength of a Hercules—in fact, it is the strongest coloring pigment known, and a mere atom of it counts immensely in the mixing pot. Make this green of the consistency of ivory black thinned for use, and apply to the surface with a camel's hair brush. When this coat is dry, next apply a coat of yellow lake glaze made thusly: Stir the yellow lake into elastic rubbing varnish to make the glaze, and to a pint of the yellow like glaze add, say, one gill, minimum measure, of the Dutch pink color. Apply this glazing color freely, as you would any glazing or color, and varnish coat. Then, as into a mirror, one may look and find a surpassing brilliancy and depth of color. This color may be striped with charming effect by the use of black, gold, carmine, cobalt, cerulean or ultramarine blue, or with dainty lines of primrose or twentieth century yellow, or with some of the dashing reds now popular.

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This is the Pierce Great Arrow 28-32 H. P., with straight tonneau body, cape top and folding glass front. Price, without top, $4,000. Cape top, extra, $200.

PIERCE

The Pierce Arrow is an American car—the best American car that has been made—better in proportion to its cost than any imported French car—better for American use, American roads and the American motorist. It offers satisfaction, minimum of expense in running, perfect service, and can be operated by the owner.

Catalogue and descriptive literature on request.

THE GEORGE N. PIERCE COMPANY,

BUFFALO. N. Y.

Members Association of Licensed Automobile Manufacturers.

The Pierce Arrow exhibited in Madison Square Garden only.

PIERCE AGENTS FOR 1906.

Boston,	J. W. Maguire Co., 745 Boylston St.
Chicago,	H. Paulman & Co., 1321 Michigan Ave.
New York,	Harrolds Motor Car Co., Broadway, 58-59th Sts.
Pittsburg,	Banker Bros. Co., Baum and Beatty Sts.
Baltimore,	Southern Auto. Co., 2021 Maryland Ave.
Buffalo,	The George N. Pierce Co., 752 Main St. (Retail)
Detroit,	J. P. Schneider, 189 Jefferson Av.
Denver,	The George N. Pierce Co., 1643 California St.
Geneva, New York,	J. A. Place.
Hartford, Conn.,	The Miner Garage Co., 120 Allyn St.
Houston, Tex.,	Hawkins Auto. & Gas Engine Co.
Kansas City, Mo.,	E. P. Moriarty & Co., 1612 Grand Ave.
Los Angeles,	Bush & Burge, Cor. 7th & Main Sts.
Louisville,	The Zorn-Strauss Co., Inc.
Milwaukee,	Hibbard Automobile Co.
Ottawa & Montreal,	Wilson & Co., 142 Bank Street.
Oakland, Cal.,	The George N. Pierce Co., 1013 Clay St. (Wholesale)
Philadelphia,	Foss-Hughes Motor Car Co., 201 N. Broad St.
Portland, Oregon,	H. M. Covey.
Portland, Me.,	J. A. Dowling.
Providence, R. I.,	The Shepard Company.
Rochester,	U. S. Automobile Co., 21 Plymouth Ave.
San Francisco,	Mobile Carriage Co., Golden Gate Ave. & Gough St.
Saratoga Springs,	W. L. Hodges, 16 Woodlawn Av.
Scranton, Pa.,	Standard Motor Car Co.
Seattle, Wash.	Broadway Auto Co.
Springfield, Mass.,	E. R. Clarke Auto. Co., 117 Lyman St.
Syracuse,	Amos-Pierce Auto Co., 109 S. State St.
St. Louis,	Western Auto. Co., 4701 Washington Blvd.
St. Paul,	C. P. Joy Auto. Co., 368 Minnesota St.
Toronto,	Auto & Supply Co., Ltd., 24 Temperance St.
Troy, N. Y.,	Troy Auto. Exchange, 22 4th St
Utica, N. Y.,	Utica Motor Car Co.

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The Week's Patents.

806,810. Wheel Tire Attachment. Josiah F. Horn, Hazleton, Pa. Filed June 21, 1905. Serial No. 266,283.

Claim.—1. In a device of the class described, a non-elastic tire casing, and spaced lugs secured upon opposite sides of and arched above the casing.

806,822. Carburetter. Orson Millard, Flint, Mich. Filed April 18, 1905. Serial No. 256,323.

Clai.—1. In a carburetter, the combination with an air induction conduit, of an oil inlet connected therewith, a valve controlling said air inlet, an electromagnet for lifting said valve and means for energizing said magnet during the induction of air.

806,860. Spark Igniter System for Explosion Engines. David L. Winters, Chicago, Ill. Filed March 6, 1905. Serial No. 248,433.

Claim.—1. In an electrical ignition system for explosion engines, the combination of a plurality of battery cells, a pair of switch arms, a working circuit having terminal connections with the pair of switch arms, each of said switch arms having an individual contact point and a contact point in common, and three connections between the plurality of battery cells and the aforesaid contact points to divide the battery cells into two portions which may be switched into the working circuit separately or together by means of the pair of switch arms aforesaid, substantially as set forth.

806,916. Clutch Controlling Mechanism. Charles A. Rich, Providence, R. I., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I., a Corporation of Rhode Island. Filed February 5, 1904. Serial No. 192,153.

Claim.—1. The combination with a clutch, of a cam shoulder thereon, an abutment engaging said shoulder, a trip for operating said abutment, a travelling dog for operating said trip, and means for freeing the dog and trip independently of the travel of the dog, substantially as described.

806,933. Motor Vehicle. Terry Stafford, Topeka, Kans., assignor of one-half to L. Anton Smith and Clement Smith, Topeka, Kans. Filed April 5, 1905. Serial No. 254,014.

Claim.—1. In a motor vehicle, the combination of a frame, a rear axle connected with the frame, a gear case connected with the rear axle, a socket carried by the forward portion of the frame, a ball complementary to said socket arranged and movable therein and having a bore, a transmission gear case fixed with respect to the ball, a shaft connecting the gearing in the two cases, a tube interposed between and connected to the two cases and inclosing the said shaft, and a shaft connected with the gear in the second mentioned case and journalled in the bore of the ball and provided in front of said ball with means whereby the shaft may be connected with a motor.

806,957. Vehicle Brake. John Curry, Vancouver, Wash. Filed November 16, 1904. Serial No. 232,986.

Claim.—1. In a vehicle brake, the combination of a brake drum B, having a securing fulcrum plate G and the brake rope opening 9 and slot 11 therein and means to secure the drum to the axle; the two armed frame C, formed as shown in Fig. 5 with one side curved, and partly grooved on the side, and having means to secure it to the axle; a transverse brake bar D, having the bell crank lever 16, the triangular bell crank lever E, grooved on its shorter sides, and means to secure the brake bar to the axle; a wheel provided with a cylindrical metal hub casing H and means to secure the same to it; the coil brake rope 10 having means to secure one end thereof to the triangular bell crank lever E and the other to the frame C, and having the brake shoe K provided with the segmental friction pieces formed as shown in Fig. 6 and having means to secure them to the brake rope; power transmitting mechanism, having means to connect the same with the brake bar D and the brake; all substanially as described.

807,032. Coupling for Tire Charging Valves. George W. Kellogg, Rochester, N. Y. Filed February 1, 1905. Serial No. 243,699.

Claim.—1. In a coupling, the combination of the hose fixture a coupling to connect said fixture with a hose, the rotatable tube 12 having one end screw threaded and having at its other end a stop 5, the externally threaded sleeve situated between the tube and fixture to connect the same, and means for rotating the tube to screw it into a corresponding tube or nipple.

807,038. Reversible Variable Speed and Power Transmission Mechanism. John G. MacPherson, Philadelphia, Pa., assignor, by direct and mesne assignments, of two-thirds to Robert P. Murphy and one-third to Ralph L. Galt, Washington, D. C. Filed October 18, 1904. Serial No. 228,919.

Claim.—1. In a forward and reverse variable speed and power transmitting mechanism, the combination with a fixed speed continuously revolving driving shaft, a driven shaft and an intermediate driven shaft, of a variable speed and power transmitting mechanism connected with the driving shaft and the intermediate driven shaft and consisting of a pair of rocking frames for regulating the speed of the intermediate shaft, rods having one end slidably mounted in said rocking frames, so as to be limited in their forward and rearward movement, and a series of gripping members for regulating the direction of the movement of the driven shaft, said gripping members being so constructed as to grip the entire surface to which they are attached.

807,048. Transmission Gear for Gas Engines. Anson G. Ronan, Toronto, Canada. Filed August 11, 1904. Serial No. 220,363.

Claim.—1. In transmission gear, the combination with the engine casing; a first toothed pinion; the engine pitman operating same; a second toothed pinion, and engine pitman operating same, of the drive shaft journalled in said engine casing, and a toothed wheel keyed to said drive shaft and in mesh with said pinions from which it receives energy.

807,104. Change Speed Gearing. Larz W. Anderson, Cincinnati, Ohio, assignor to The Cincinnati Shaper Company, Cincinnati, Ohio. Filed June 17, 1904. Serial No. 212,978.

Claim.—1. A change gear device comprising a driving shaft, a driven shaft, similar reversed cones of gears keyed to each shaft, a shaft eccentrically journalled with means for rotating it, a frame journalled on said shaft, an intermediate gear carried by said frame and sliding on said frame in a direction parallel to the axes of said cones of gears, said intermediate gear being adapted to engage any two of the opposite gears of said cones, and means for locking said frame in position, substantially as described.

807,126. Oleaginous Mixture for Sprinkling on Roads, &c. Charles V. Potter, Balwyn, Victoria, Australia, assignor to Robert Maxmillian Hahn, Melbourne, Victoria, Australia. Filed December 20, 1904. Renewed November 16, 1905. Serial No. 287,680.

Claim.—The herein described mixture for the purpose specified consisting in the combination of carbolic acid, oil, powdered asphaltum, tar, glycerin refuse and water in the proportions mentioned and prepared substantially as described.

807,131. Carbureter. John B. Salo, New York, N. Y., assignor of one-half to Andrew H. Hoag, New York, N. Y. Filed October 9, 1903. Serial No. 176,355.

Claim.—1. In a carbureter, an absorbent member having a thickened edge portion, and a plurality of air circulation openings.

2. In a carbureter, a plurality of members each consisting of a flanged and perforated absorbent cake of solid porous material, the perforations in contiguous cakes being out of alignment, said members being superposed one upon the other and spaced by the flanges thereof to produce air circulation channels between their opposing surfaces.

807,144. Carbureter. Benjamin F. Walker, Bridgeport, Conn. Filed January 16, 1905. Serial No. 241,198.

Claim.—1. In a carbureter the combination with a body having an air inlet and a central fuel spraying nozzle, of a cone shaped coil spring air throttle through which air passes and whose smaller coils surround and rest upon the spraying nozzle and means for closing the coils to shut off the passage of air.

807,156. Steering Mechanism. William K. Cleveland, St. Petersburg, Fla. Filed May 12, 1905. Serial No. 260,183.

Claim.—1. In an apparatus of the class described, means for supporting and moving a vehicle body comprising a bracket provided with a casing, a drive shaft journalled in the casing and composed of a central section and two end sections, the end section comprising a cylindrical inner portion and a squared outer portion, trunnions on the ends of the central section, trunnions on the inner ends of the end sections and arranged at right angles to the trunnions on the central section, split rings encircling the junctions of the sections and provided with radial openings to form bearings for the trunnions, hollow spindles mounted on the cylindrical portions of the end sections and having cup shaped inner ends to receive the split rings, ball races on the outer surfaces of the hollow spindles, trunnions on the inner ends of the hollow spindles and in line with the axes of the drive shaft section couplings, yokes journalled on the drive shafts and provided with bearings to receive the trunnions on the hollow spindles, braces connecting the yokes with the body supporting bracket, hubs journalled on the hollow spindles and provided on their interior surfaces with ball races for coacting with the races on the hollow spindles, balls in the races, diaphragms on the hubs and provided with squared openings to receive the square portions of the end drive shaft sections, and crank arms on the hollow spindles for turning them on their trunnions.

807,167. Chain Armor for Pneumatic Tires. Edward B. Hazleton, Sheffield, England. Filed December 29, 1904. Serial No. 238,707.

Claim.—1. A chain armor for a pneumatic tire, said armor extending entirely around the tire and inclosing a part of the sides

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thereof and being provided with the side extensions having eyelets, and wire cords passed through said eyelets and secured to the rim of the wheel, substantially as shown and described.

807,186. Sanding Device for Automobiles. Augustus L. Moss, Sandusky, Ohio. Filed February 8, 1905. Serial No. 244,727.

Claim.—1. An automobile provided with a sanding device having pipes terminating in nozzles and extending at an angle toward the path to be travelled by the driving wheels, but terminating away from the wheels, at the inner side of said path, for scattering sand over a roadway in front of the driving wheels of the automobile and across their pathway.

807,216. Variable Speed Driving Mechanism. Radford Stockbridge, Worcester, Mass., assignor of one-half to Arthur W. Beaman, Worcester, Mass. Original application filed October 24, 1902. Serial No. 128,552. Divided and this application filed December 9, 1903. Serial No. 184,393.

Claim.—1. The combination with a slotted vibrating pitman and a crank plate engaging the slot of said pitman, said crank plate having a radial slot, of a rotating gear journalled concentrically with said crank plate and having a radial slot and a rotating ring interposed between said gear and said crank plate and having its axis eccentric to the axis of said gear and said crank plate, said eccentric ring engaging the slots in said crank plate and said gear, whereby the rotation of said gear is imparted to said crank plate with a variable movement.

807,255. Clutch Mechanism for Coupling Rotatable Parts. Joseph Evans, Birmingham, England. Filed January 30, 1905. Serial No. 243,395.

Claim.—1. A governing device for clutch mechanisms, comprising the combination with a driving and a driven element adapted to interlock one with the other, of locking means carried by one of said elements and engaging the other of said elements for preventing the operation of the driven element by the driving element until said elements are in position to interlock, and means provided on the other of said elements and adapted to release said locking means to permit of the interlocking of the said element so that the two elements can be operated together.

807,296. Lamp for Autos and Other Vehicles and Purposes. Nicolas Lowenstein, Philadelphia, Pa. Filed June 26, 1905. Serial No. 267,081.

Claim.—1. In a lamp, a reflector composed of members, the rear one of which is in the form of a prolate spheroid, and the front one of which is that of a cone, the reflecting surfaces of said members being practically continuities and in unbroken planes, the burner of the lamp occupying the rear member of said reflector and located entirely within the same, a casing and a plurality of differential lenses on said casing, one behind the other and both in front of said reflector, the inner lens being supported by arms, so that comparatively unobstructed space exists in the casing around the periph ery of said lens.

807,311. Tire for Vehicles. Rienzi B. Parker, Hartford, Conn. Filed February 25, 1905. Serial No. 241,281.

Claim.—1. The combination, with a wheel, of a plurality of tire units each conforming to the periphery of said wheel; a circular binder for clamping the units to the wheel, and devices secured to the wheel and serving to separate the units from each other.

807,322. Exhaust Muffler. Henry R. Selden, Rochester, N. Y. Filed November 16, 1904. Serial No. 233,034.

Claim.—1. In an exhaust muffler, the combination of a casing into which the exhaust is delivered and which is always open to receive the exhaust, and spring operated means fitting in said casing, to receive the force of the exhaust and to allow the burned gases to expand, said casing being provided with means whereby the burned gases may escape therefrom, substantially as described.

807,338. Motor Operating with Heavy Hydrocarbons. Emile L. P. Turenne, Paris, France, assignor to the firm of Barbier Benard & Turenne, Paris, France. Filed June 5, 1905. Serial No. 263,837.

Claim.—1. In a motor of the kind described, the combination, with a cylinder in which a piston is actuated, an explosion chamber, means for injecting a charge of finely divided liquid fuel into this chamber and means for producing the ignition of the charge, of a tube or channel passing through said explosion chamber and communicating with the cylinder, a chamber for air and water, a valve between this chamber and the said tube, means for admitting air to the chamber for air and water, and means fo supplying the said chamber with water, the said valve opening during the suction stroke of the piston into the cylinder for the purpose of causing the mixed air and the water to pass from the said chamber for air and water to the said tube, substantially as described and shown and for the purposes set forth.

807,350. Resilient Tire and Means for Securing Same in Place. William F. Beasley, Plymouth, N. C. Filed February 20, 1903. Serial No. 144,337.

Claim.—1. A resilient tire section, consisting of a strip having wedge shaped notches diagonally disposed in its inner and outer faces, and having apertures of substantially rhombic shape formed in its middle portion, whereby a series of intersecting trussed walls are formed, substantially as described.

807,351. Pneumatic Tire. John H. Bleoo, New York, N. Y., assignor to Abraham B. Levy, New York, N. Y. Filed March 2, 1905. Serial No. 248,002.

Claim.—1. A tire comprising rubber having a plurality of series of spring protectors embedded therein, spaces being provided between the edges of the protectors of each series, a layer of rubber being between the protectors, a layer of rubber within the inner protectors, a layer of rubber over the outer protectors, and rubber extending between the edges of the protectors of each series and uniting the adjacent layers of rubber, the rubber being vulcanized upon the protectors, substantially as described.

807,354. Gas Engine. Franz Burger, Fort Wayne, Ind., assignor of three-fourths to Henry M. Williams, Fort Wayne, Ind. Filed February 13, 1902. Serial No. 93,945.

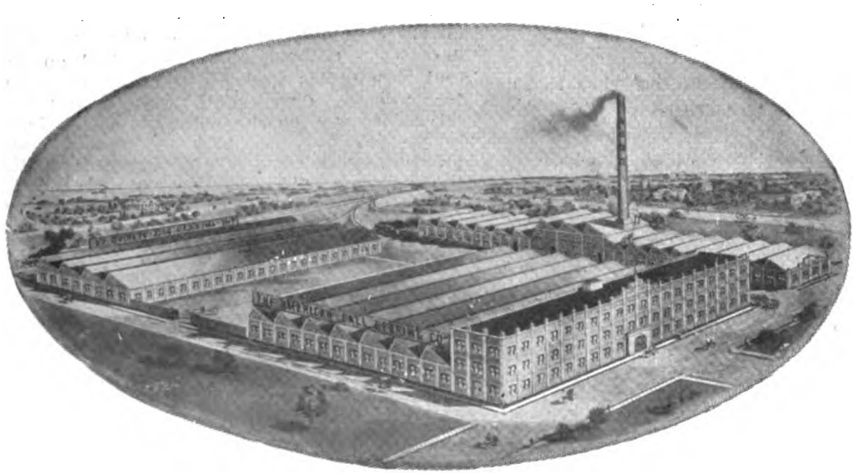
Claim.—1. The combination in an internal combustion engine, of a cylinder having a transverse partion forming a chamber at the rear of the cylinder, a port in said partition, means for introducing air into said chamber and for compressing the same, a gas nozzle for delivering gas through said port, and an igniter in said port, substantially as described.

807,391. Hydrocarbon Motor. Abbot A. Low, Horseshoe, N. Y. Filed February 20, 1905. Serial No. 246,418.

Claim.—1. In combination with a hydrocarbon motor, a mixing chamber, an inlet valve interposed between said mixing chamber and the combustion chamber, means for injecting alcohol, naphtha and kerosene oil either independently or simultaneously into said mixing chamber, and means for introducing compressed air into said mixing chamber, and means for introducing compressed air into said mixing chamber for the purpose described.

807,419. Motor Propelled Vehicle. Edward S. Clark, Boston, Mass. Filed February 26, 1902. Serial No. 95,758.

Claim.—1. In a motor propelled vehicle, the combination of a rotatable steering post, a steering lever for rotating said post and pivoted thereto to swing in a vertical plane, a cam on the head of said lever, a fuel supply controlling rod mounted parallel with said post and bearing endwise against said cam, whereby the fuel supply is regulated by the pivotal movements of said lever and cam, substantially as set forth.



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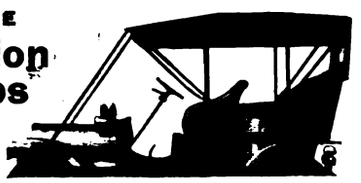
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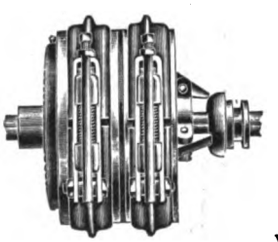
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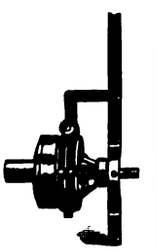


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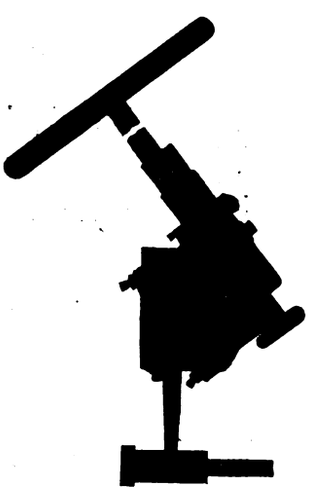


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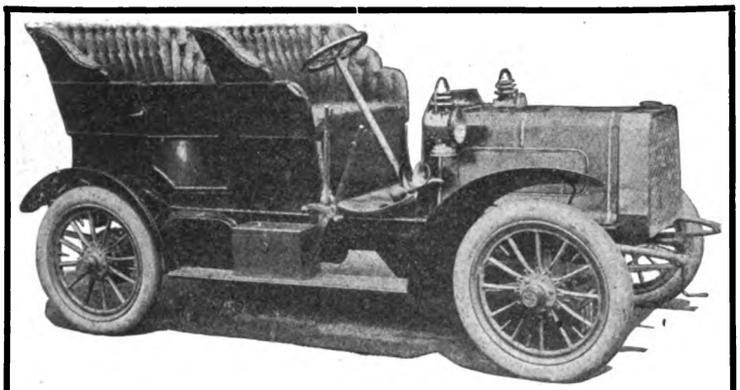
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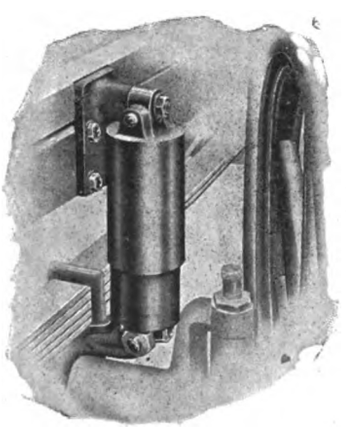
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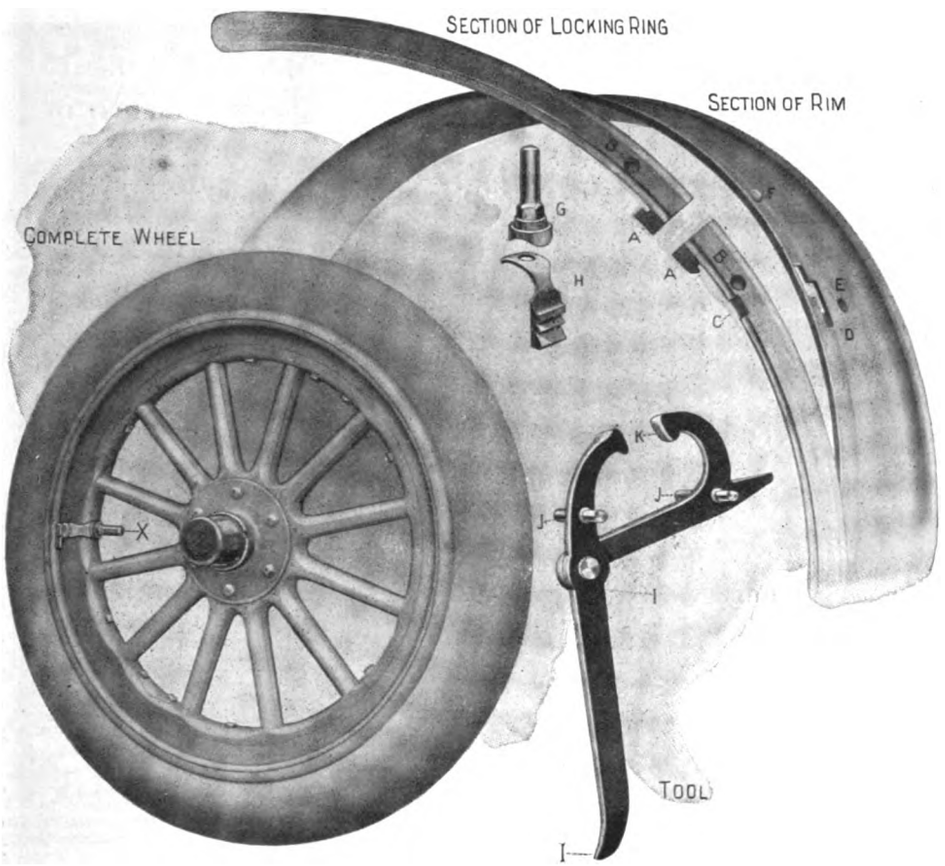
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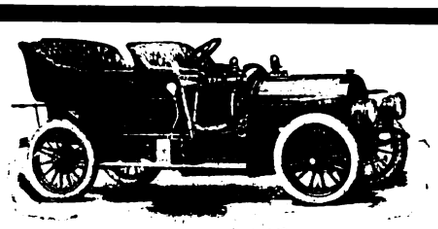
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Now there's a sure way to know when your Tire is leaking—without watching it—without worrying about it—without getting out of the car.

If you have the Goodyear Universal Rim on your car, it will sound an alarm before the air in your tire is exhausted to a rim-cutting point. And this is the way it does it:

The flanges of the Goodyear Universal Rim (which hold the tire in place) are circles of steel which slide on and off the base of the rim, as a ring slides on and off your finger. When both flanges are in place, a "key" ring or locking ring, keeps the outer flange from being forced off by pressure of the tire. When used for Goodyear Universal (the tire that wipes out 90 per cent of all tire troubles) the Universal Rim would be assembled like Fig. 1.

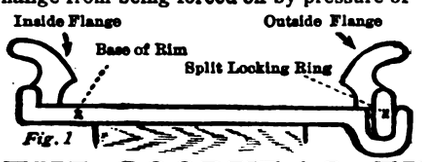


Fig. 1

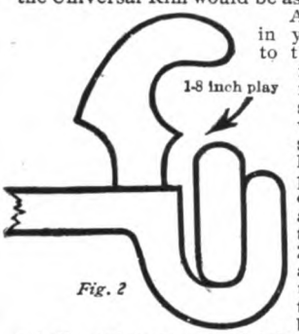


Fig. 2

As soon as the air in your tire leaks out to the danger point, it lets the outer flange slide inward slightly, except where the valve stem comes. This leaves about ⅛ inch play between the top of the locking ring and the bottom of the flange (see Fig. 2,) and just as soon as the air leaks out to the danger point, this binding ring begins to tinkle like a bell, saying to you plainly and unmistakably: "Shut Down! Stop!! Your Tire is beginning to rim-cut!!!" If you *heed* this call, you have saved the cost of a new tire.

* * * *

This is only *one* of the reasons why the Goodyear Universal Rim will preserve *any* tire to a hale old age.

There are others of even greater importance.

If you get a puncture, you can remove your tire to make the repair in 30 seconds—and it requires no tools but the hands. It's as easy to remove and put back a tire on a Goodyear Universal Rim as it is to put on and take off your cuffs, and it takes but little more time.

This is all there is to removing a tire from the Universal Rim. See how *easy* it is.

Unscrew the Thumb Nut which holds the valve stem tight against the rim. Push the valve Stem up into the Tire (this lifts the steel plate which holds the flanges in position.)

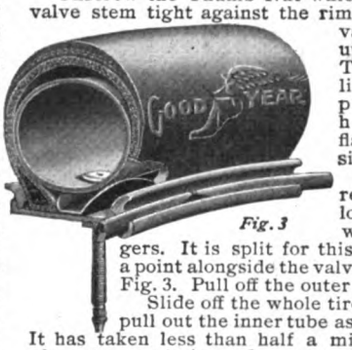


Fig. 3

Spread and remove the locking ring with your fingers. It is split for this purpose at a point alongside the valve stem. See Fig. 3. Pull off the outer flange ring.

Slide off the whole tire, or simply pull out the inner tube as you prefer. It has taken less than half a minute. And after the repair is made, another 30 seconds and you are ready to pump up.

* * * *

The Goodyear Universal Rim will take any Goodyear Tire (Detachable or Clincher) or *any standard clincher tire on the market*. If your car has Goodyear Universal Rims, you can have a tire of a different make on *each wheel* if you wish. And it will take less than a minute per wheel to change from one make of tire to another, *without the use of a single tool.*

* * * *

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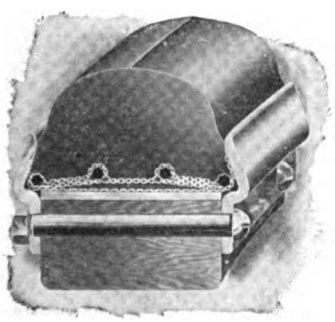
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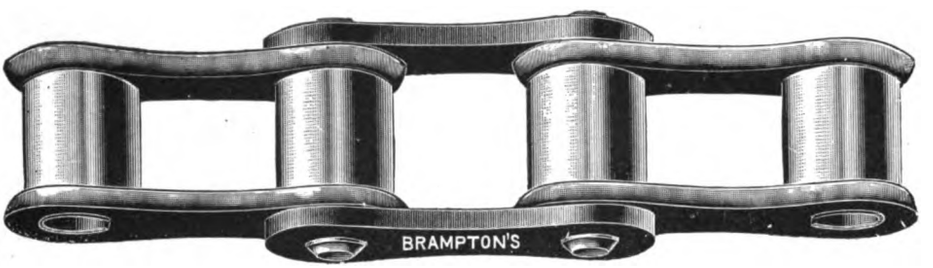
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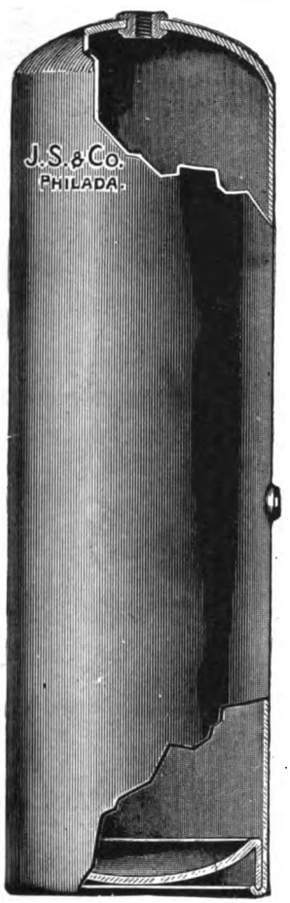
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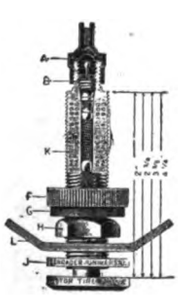
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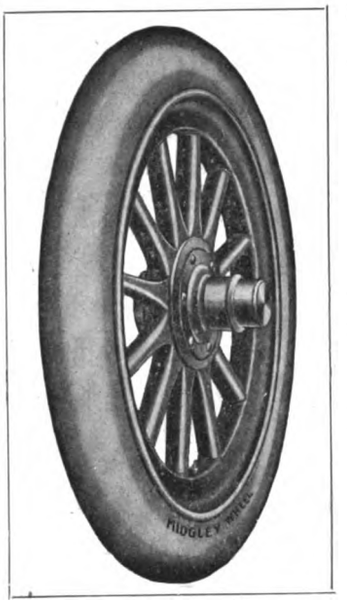
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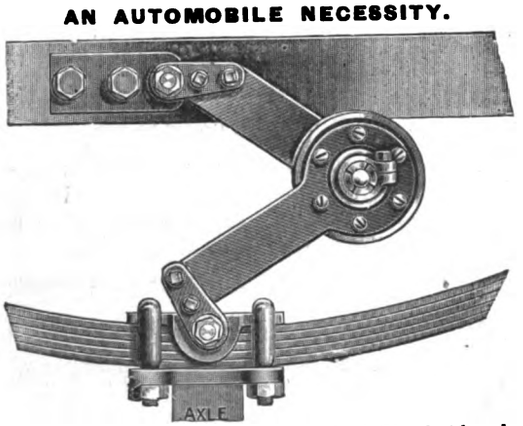
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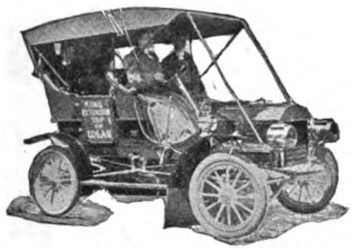
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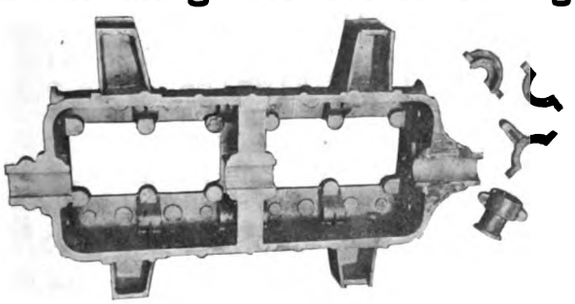


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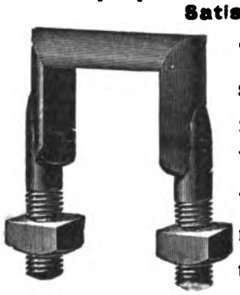


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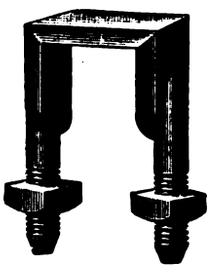
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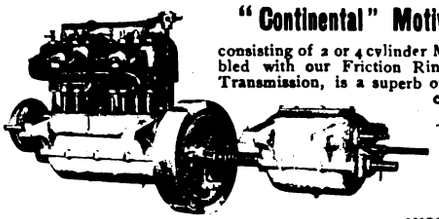
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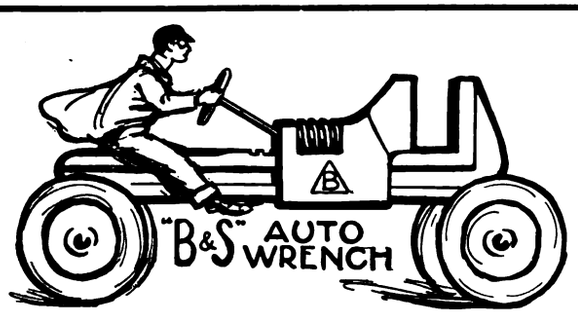
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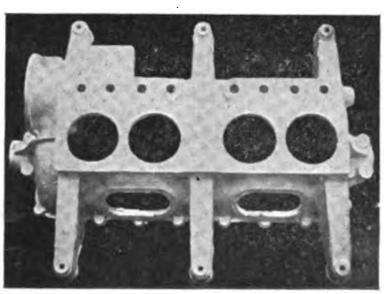
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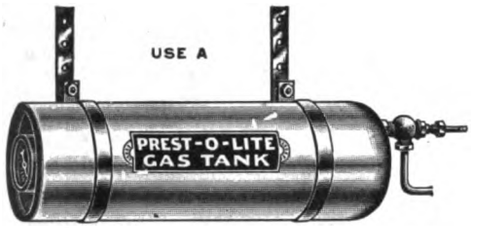
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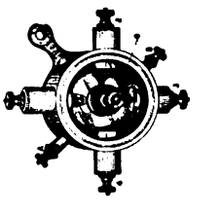
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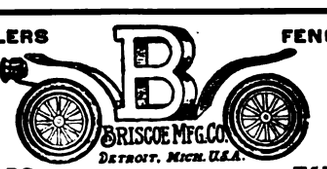
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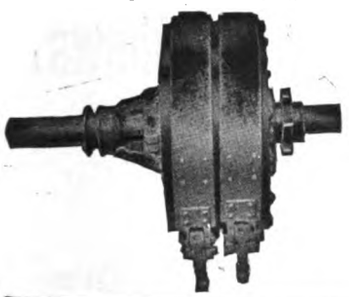
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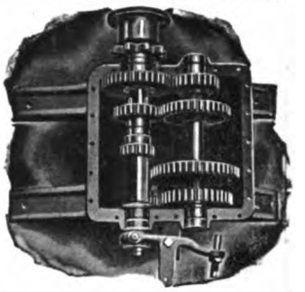
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What is more important than selecting the right one? We are specialists in that line. We have the know-how, the facilities and the prices.

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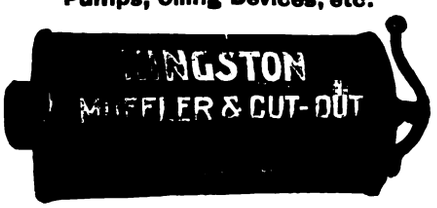
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Pat. Jan. 29, 1901.



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An instrument that will enable you to determine the grade per cent. you are ascending or descending.

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PHILADELPHIA.

Steel Balls,
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Roller Bearings,
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PASSENGERS ON D. & B. LINE WITNESS A GLORIOUS SIGHT

A moonlight scene on Lake Erie is sublime. At twilight as the sun, like a golden ball of fire, gradually descends from view in the western horizon, the moon rises in its stateliness, at first modestly spreading its mellow light and, growing bolder, bursts forth in one pure sheen of grandeur.

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We make parts from your own design from either brass or aluminum

On Contract Basis.

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DIAMOND CHAIN & MFG. CO., INDIANAPOLIS

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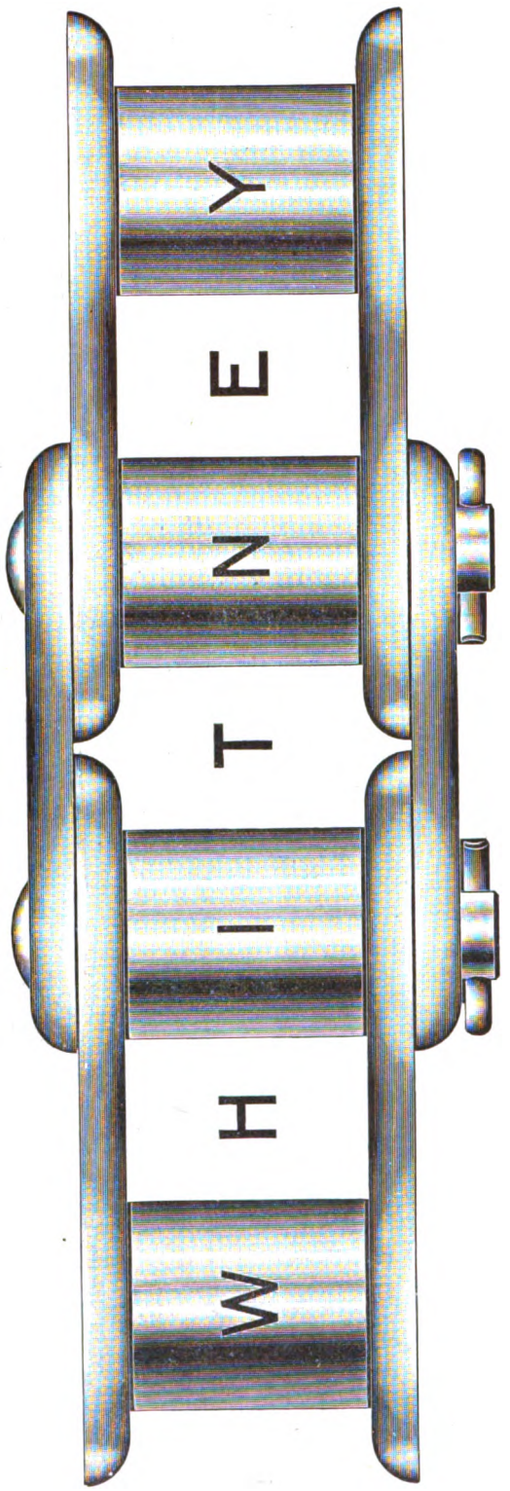
See 1906 Model "WHITNEY" CHAINS at the Automobile Shows.

Thousands of Chains have been damaged by interferences and unfavorable conditions.

In the future we hope for Sprockets better than the average of the past.

Send for our new Catalog and see instructions about lubrication and care of a chain.

In designing your car select the chain you consider right and leave plenty of space for a wider and larger chain.



DETACHABLE TYPE—PATENTED.

Are your Sprockets cut to the correct bottom diameter with cutters correct in form?

Are your Sprocket teeth too wide and too straight on the sides?

Have the sharp corners of your sprocket teeth been removed after cutting?

Are your sprockets in line?

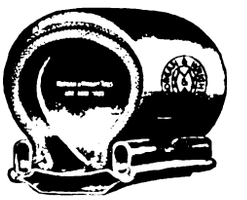
As a manufacturer do you inspect every sprocket by comparing it with a correct model or do you accept anything so long as it has the right number of teeth?

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BAILEY TREAD


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These Tires Have Met THE AUTOMOBILIST'S Idea of What a Really GOOD Tire Should Be.

They have commanded popular favor THROUGH SHEER FORCE OF MERIT.

They have earned—and will occupy—a BIG place in the 1906 auto tire business.

☞We invite the most thorough and candid investigation on the part of every tire user who believes that he has a right to expect a full dollar's worth of tire SERVICE in return for every dollar of cost.

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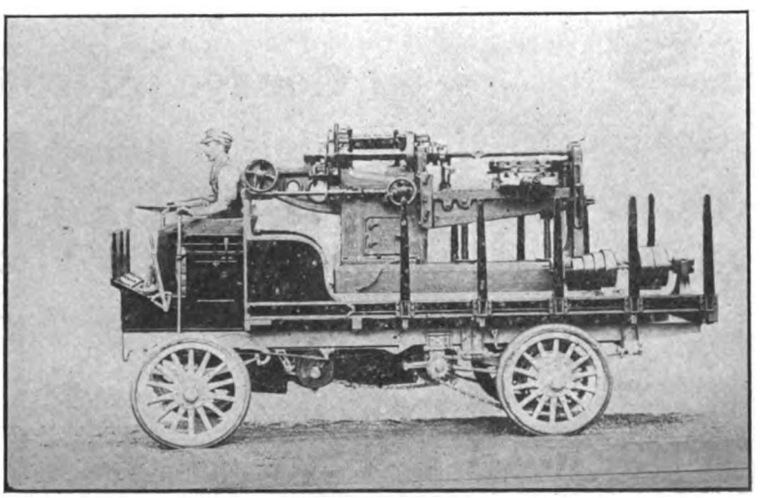
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The West Indies Transportation Company of Havana, Cuba, after using seven of our commercial cars for the past year, has just placed an order for four more, which is positive proof that our cars have given satisfaction. This is only one of many.

We are pleased at any time to demonstrate that it will do the same for you.

Capacity 6000 lbs.

Speed 10 miles per hour.



Air cooled can be used every day in the year. Chassis adapted to any style of body.

THREE TON STAKE TRUCK

Write for Catalogue and address of nearest agent.

KNOX AUTOMOBILE CO., Springfield, Mass.

MANUFACTURERS OF THE WATERLESS KNOX COMMERCIAL AND PLEASURE CARS.

LARGEST AND OLDEST MANUFACTURERS OF GASOLINE COMMERCIAL CARS.

We exhibit in New York, Madison Square Garden only January 13-20. Member of Association of Licensed Automobile Manufacturers.

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OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who are licensed to manufacture or sell under the G & J Patents:

G & J Tire Co.
Hartford Rubber Works Co.
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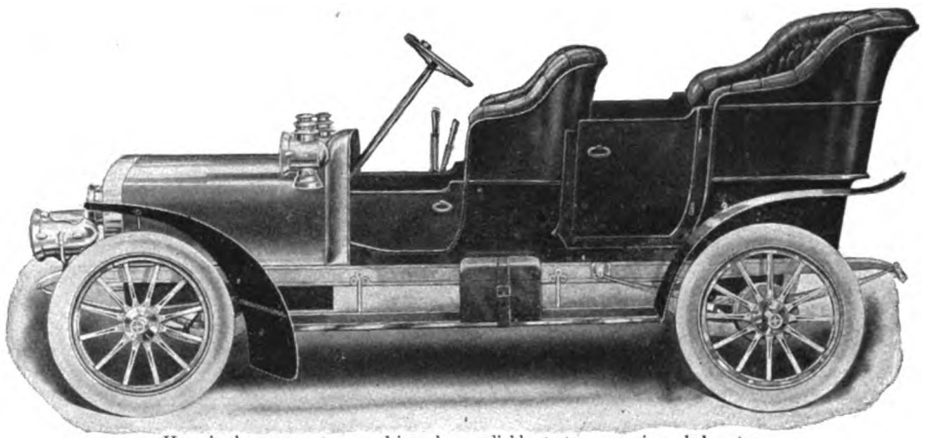
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Indianapolis, Ind.

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Aerocar

The Car of today, tomorrow and the years to come.
—Built by practical men.—



Here is the **one** motor car driven by a reliable, test-proven air-cooled motor.

The vital factor in every car is the motor.

All Automobile authorities - people who have had most experience—concede that many improvements are necessary in water cooled motors—too many mechanical complications, too much weight, too many troubles.

The same authorities agree that in the reliable, success-proven air-cooled motor lies the solution of most all motor car troubles.

The **Aerocar** has such an air-cooled motor. It has taken eight years of continual efforts, experimenting, testing, proving and many thousands of dollars to produce this reliable air-cooled motor, but the results sought have been secured, and they are well worth all the time, labor and money expended.

The air-cooled motor of the **Aerocar** is of wonderful efficiency in power. Runs with the uniform smoothness and rythm of an electric dynamo—under all climatic conditions, over all sorts of roads. Has strength of construction with simplicity of control, giving great durability of service, develops continuous higher power for weight, and gives greater speed than any other motor.

In the necessary, the vital qualities for satisfactory service, the air-cooled motor of the **Aerocar** is supreme—in a class by itself—the motor that "motes" when you want it to serve you.

The body of the **Aerocar** compares most favorably with any car either foreign or American. It embodies the best features of each, is graceful in line, is luxuriously roomy and comfortable; is finished and upholstered strictly up-to-date.

Aerocar 1906. 24 h.p. Four cylinders. Five passengers. 45 miles an hour. 104-inch wheel base. Shaft drive. Sliding gear transmission. Three speeds, forward and reverse. Leather-faced cone clutch. Hollow steel dash. Four sight lubricator on dash. Tool box on running board. 34 x 4 tires. 9-inch road clearance. Weight 2,000 pounds. Fully equipped, ready for the road, including two large gas headlights, $2800 f. o. b. Detroit.

Will be exhibited and demonstrated at the Automobile shows in New York and Chicago.

The dealer who has the selling agency for the **Aerocar** will have a gold mine. Territory being rapidly taken up. If interested write us promptly.



The Aerocar Company, Detroit, Michigan

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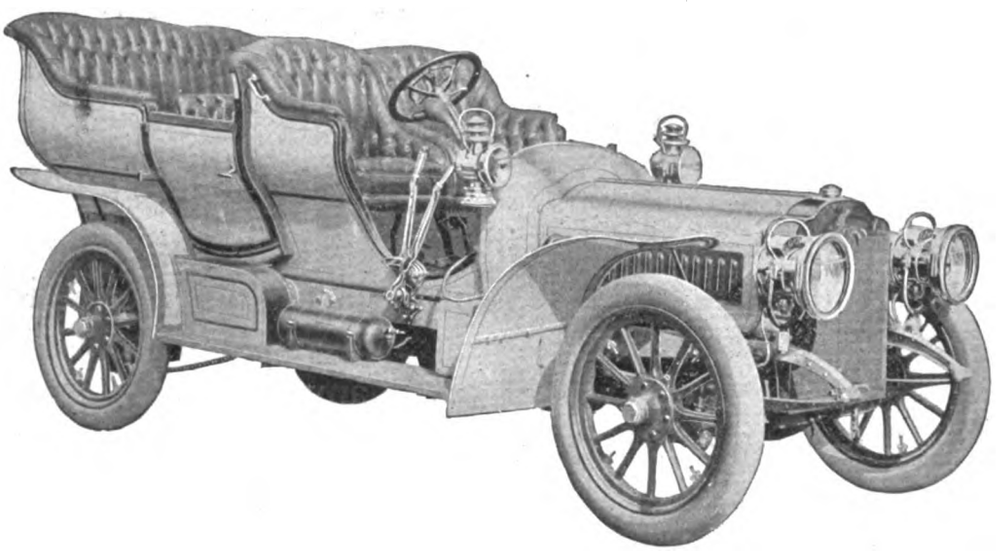
The Largest Factory in the World

Devoted to the Manufacture of High Powered Automobiles

now in course of construction will be taxed to the full limit of its capacity to meet the extraordinary demand for the magnificent

50 H. P.

THOMAS FLYER



The story is the same in every big city in the country—the complete supremacy of this wonderful car conceded on every hand and agents begging for a larger allotment. There is nothing accidental about this extraordinary enthusiasm. It is the logical outcome of years of painstaking experience and preparation, culminating in a car which represents the most costly and the most perfect possible construction throughout. The 1906 Thomas marks the arrival of the long-expected American car which will wrest supremacy from the finest foreign product. Just one indication of its marvelous efficiency is the fact that

Every Stock Thomas is Guaranteed to Show Sixty miles an hour before leaving the Factory.

We are merely consulting your own interests when we advise you to get in touch with the nearest Thomas representative at the earliest possible moment.

THE E. R. THOMAS MOTOR CO.,

1416 Niagara Street, **BUFFALO, N. Y.**

Members Association of Licensed Automobile Manufacturers.

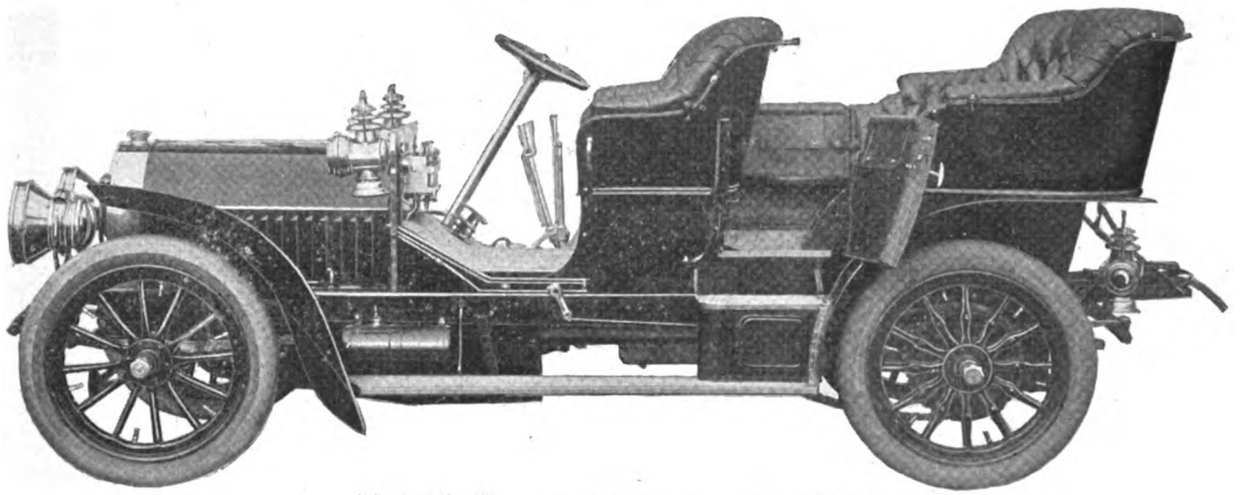
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. 30-35 H. P., $5,000.

Both with complete touring equipment.



TYPE E. 15-20 H. P. $3000.

Top and Luggage Carrier extra.

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; extra wide doors; fitted with top irons; color and striping optional.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 92 inches.
CONTROL, spark and gas levers on steering wheel.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5 to 7; fitted with top irons; extra wide doors; color and striping optional.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.
CONTROL, spark and gas levers on steering wheel.

For 12c in stamps we will mail 12 souvenir postal cards showing various views of the LOCOMOBILE in the Vanderbilt Cup Race, making the best showing of any American car in any international contest. For 10c in stamps we will mail a five-color poster showing the LOCOMOBILE finishing the race. Printed matter of 1906 cars on application.

The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 240 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1254 Michigan Ave.

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QUEEN AUTOMOBILES FOR 1906

3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P.

Price, $2,000.

SPECIFICATIONS

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32 in.
Wheel Base.	101 inches.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

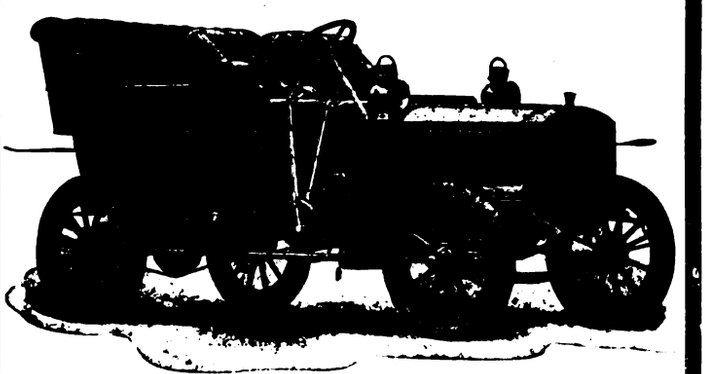
C. H. BLOMSTROM MOTOR CO

DETROIT, MICH.

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The Autocar

Two types for 1906



Type XII, - - - $2600

The Autocar Factory will produce two models during 1906: A modern-to-the-minute, five passenger tourer of extraordinary car-power and buoyancy; and the widely-known Autocar Runabout—power increased, and control changed from left-hand lever steer with spark and throttle levers, to right-hand wheel steer with spark and throttle control grips in the rim of wheel.

The Autocar new Type XII is the biggest, broadest and most powerful car ever produced in The Autocar Factory. Four-cylinder vertical motor; water cooled; 24 (James Watt) horse power. Sliding-gear transmission; three forward speeds and reverse. Shaft drive. Internal and external hub brakes. Characteristic Autocar control—right-hand wheel steer, with spark and throttle control grips in rim of wheel. Satisfying in looks, luxury, speed and performance, and moderate in price. $2600.



Type X, - - - $1000

The Autocar Runabout has 12 (James Watt) horse power, two-cylinder horizontal opposed motor, in front; it has shaft drive with sliding-gear traismission—three forward speeds and reverse. That it is the best runabout built has long been a settled fact. It is distinguished as being the first and only motor-car which is

Standardized

The Autocar Co., Ardmore, Pa.

Member Association of Licensed Automobile Manufacturers.

Reliability

Indianapolis
Dunlop
Tire



Open Steam Cured Fitted with Flap Wide Edges

This tire is fitted with a flap, which protects the air tube from screw heads in the rim and from moisture, and does away with the necessity of fabric-covered tubes. The special edges and the flap constrict against the channel of the rim in such a way as to prevent creeping. It is entirely open steam cured, which gives the tire exceptional strength.

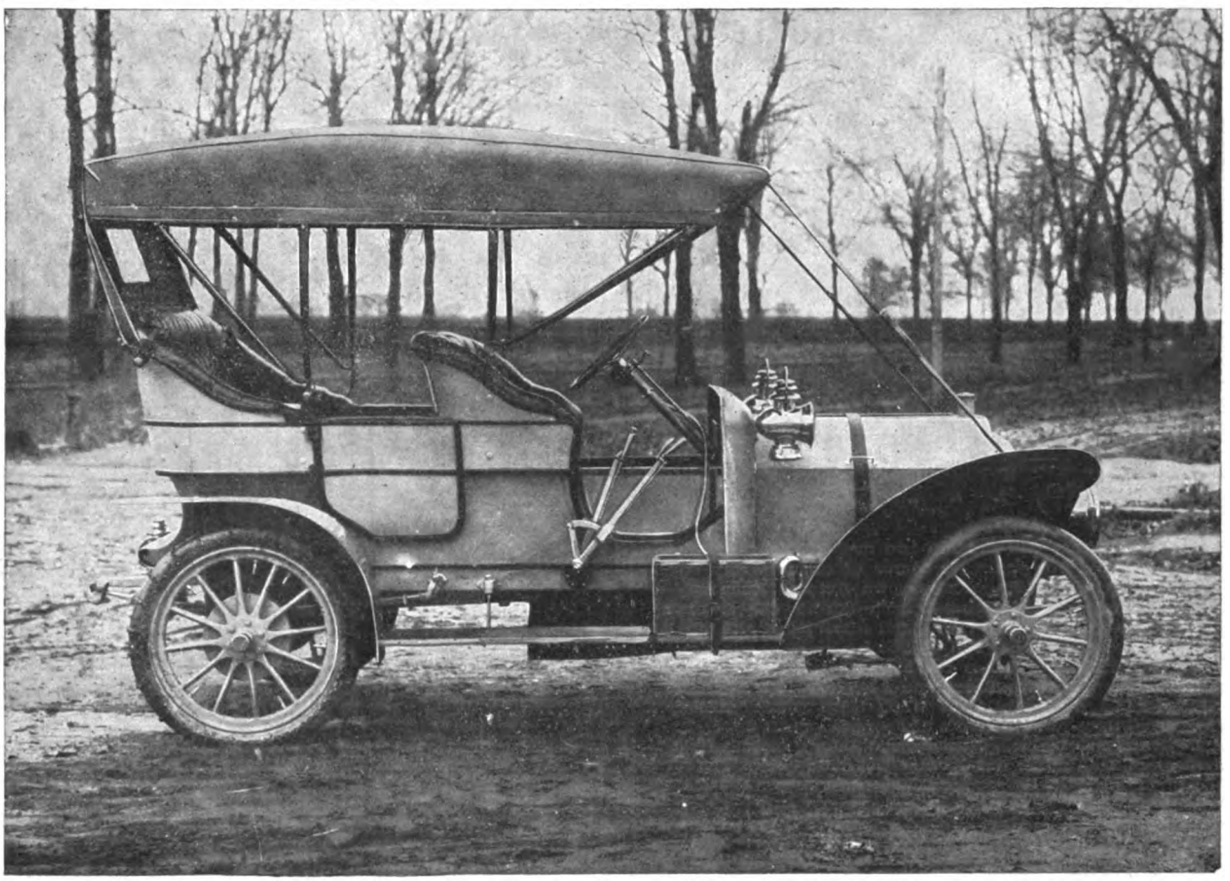
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Indianapolis
549 East Georgia St.

Chicago **429 Wabash Ave.**	**Denver** **1528 Court Place**
Detroit **247 Jefferson Ave.**	**Minneapolis** **21 South Second St.**
Boston **43 Columbus Ave.**	**San Francisco** **327 Van Ness Ave.**
Buffalo **9 West Huron St,**	**Portland** **64 Sixth Street**
Cleveland **337 Huron St.**	**Los Angeles** **1038 South Main St.**

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OLDSMOBILE



The Palace Touring Car, Model "S"
Price, $2250.00.

If you want STYLE—you have it in Model S, the latest and most approved European theories and designs, thoroughly adapted to American requirements. The front door, first introduced by us, keeps out cold, dust, and adds to the finished appearance of the car.

If you want SPEED—you have it in Model S, surplus power for hill climbing and difficult roads, and all the "legs" you can possibly use.

If you want STABILITY—you have it in Model S, high-grade material, careful workmanship and every part thoroughly inspected and tested to do its work and do it right.

That's Model S—STYLE, SPEED, STABILITY.

OLDS MOTOR WORKS, - - - - Lansing, Mich., U. S. A.

Member A. L. A. M.

We will Exhibit at the Madison Square Garden Automobile Show only, Jan. 13-20.

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LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

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Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

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LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K7

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Diamond

SIDE WIRE SOLID TIRES

EXCEL IN THIS TYPE.

THEIR RECORD IS A DIAMOND RECORD

WHY TAKE A CHANCE?

Interesting Facts as to Weights and Sizes sent on request.

THE DIAMOND RUBBER COMPANY,

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CHICAGO—167-169 Lake St.
CLEVELAND—328 Huron St.
SAN FRANCISCO—606 Mission St.
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MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

Northern

TO BE EXHIBITED AT MADISON SQUARE GARDEN, NEW YORK, JAN. 13 TO 20, AND AT CHICAGO IN FEBRUARY.

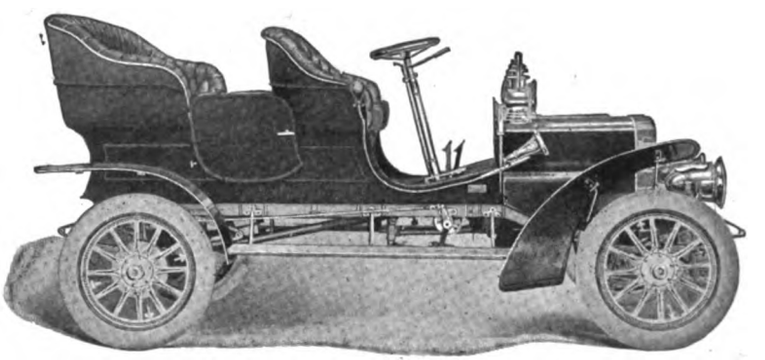
Better than ever. Motor enlarged affording 20 h.p. and with wheel base increased to 106 inches, and longer and heavier full elliptic springs it will fully sustain its reputation of being the quietest and easiest running car in the world.

Other Notable Improvements: Brake pedal fitted with ratchet and pawl; pressed steel brake drums on rear wheels, with external contracting brake bands lined with Camel's hair belting 3 inches wide, affording an exceptionally large and efficient braking surface Bodies ironed for tops. Improved catches on side entrance doors.

Write for catalogue and full information about

1906 MODELS:

7 h. p. Sturdy Northern Runabout with lamp equipment, ... $650
20 h. p. two Cylinder Car with gas and oil lamp equipment, ... $1800
20 h. p. Limousine, ... $2800
Model "K" 30 h. p. four Cylinder Car with gas and oil lamp equipment, ... $3000



Silent Northern Touring Car. Double Side Entrance, Four-inch Tires. Gas and Oil Equipment.

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Members Association of Licensed Automobile Manufacturers.

New York City Agent: PETER FOGARTY, 142 West 38th Street.

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THE COLD PROOF



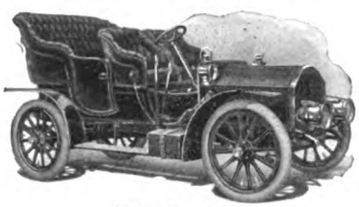
Waltham Orient

Zero Weather

Has no effect on an ORIENT AIR-COOLED CAR. Good for twenty-four hours a day and 365 days a year.

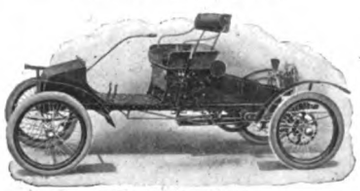
Five Touring Models

Model R	20 H.-P.	$2250
Model N	20 H.-P.	$2000
Model M	16 H.-P.	$1750
Model L	16 H.-P.	$1750
Model K	16 H.-P.	$1600



Model R. $2250

A car of the utmost simplicity. Looks well, rides well, runs well and *stays* well.



Model BB. $400

Orient Friction-Drive Buckboard

The lowest priced motor car in the world. 4 H.-P. AIR-COOLED. Weight, 550 lbs. Gasoline consumption, one gallon to 35 miles. Oil consumption, one pint in 90 miles. Maximum power, 40 to 1. Will climb grades and drive through sand that no other motor car, of any horse power, can negotiate. Speed 30 miles an hour.

Write for our new 1906 Catalogue, which tells the AIR-COOLED STORY.

WALTHAM MFG. CO.

Waltham, Mass., U. S. A.

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National

RELIABILITY

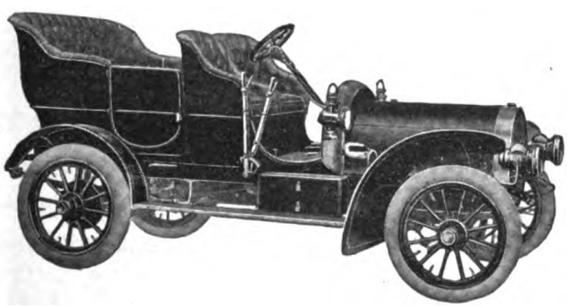
was demonstrated in the most convincing manner at Indianapolis, on November 16th-17th, 1905, when a **National Stock Car** made 1094 3-16 miles in 24 hours, breaking the World's Record by **78 9-16 Miles.**

At the NEW YORK SHOW 69th Regiment Armory Jan. 13th to 20th

WATCH FOR THE ROUND RADIATOR

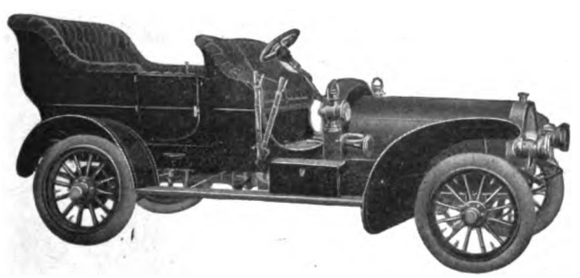
AND

At the CHICAGO SHOW Coliseum Spaces 77-78-79 Feb. 3d to 10th



National Model D, 4 cyl., 35-40 H. P. Price $3,000.

THE CAR THAT BROKE THE WORLD'S RECORDS



National Model E, 6 cyl., 50-60 H. P. Price $4,000.

AN INNOVATION IN TOURING CARS

Stylish, powerful, smooth runnnig, easily controlled. Aluminum body, seats seven passengers comfortably, ***all facing forward.***

WRITE FOR PARTICULARS

NATIONAL MOTOR VEHICLE COMPANY

1007 E. 22d STREET, - INDIANAPOLIS, IND.

DISTRIBUTORS

Linscott Motor Co.....163 Columbus Ave., Boston, Mass.
Homan & Schuls Co.....38th St. & Broadway, New York, N. Y.
Ralph Temple Auto Co.....311 Mich. Ave., Chicago, Ill.
Liberty Auto Co.....138 Beatty St., Pittsburg, Pa.
Tioga Auto Co.....Broad and Tioga Sts., Philadelphia, Pa.
Colonial Auto Co.....3944 Olive St., St. Louis, Mo.
The Fisher Auto Co.....330 N. Illinois St., Indianapolis, Ind.

Member American Motor Car Manufacturers' Association, Chicago.

The Incomparable WHITE

The Car for Service.



NEW WHITE CATALOG.

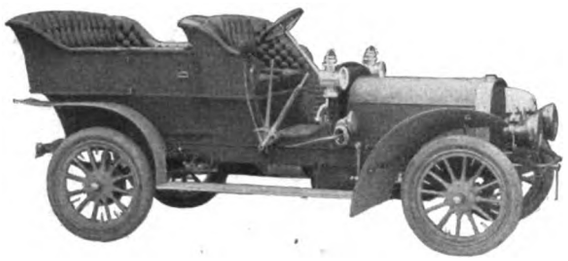
There has been just issued a new catalog of the White steam car which we believe will prove of interest to all motorists, actual and prospective. The catalog comprises a brief historical sketch, tracing the development of steam machinery; a concise and lucid description of the White system; references to the continuous successes of White cars, commencing in 1901; and full specifications, prices. etc., of the Model "F" side-entrance White cars, of which we can make immediate deliveries—touring cars, victorias, limousines, runabouts, landaulets and extension landaulets. The catalog is printed in three colors and is handsomely illustrated.

Sent free upon request.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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Model R--Four-Cylinder Touring Car.

HAYNES

Vertical roller-bearing engines. Cylinders cast separately, 5½x6 inches, 50 H. P. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master Clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller-bearings throughout. 108-inch wheel base, 54-inch tonneau, seating five people. Four to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, $3,500, f. o. b. Kokomo. Full equipment.

If an automobile weighing 2,750 pounds, plus the weight of five passengers, is dropped over a sheer embankment of seven feet, the machinery will receive a shock of just the same severity as if suddenly checked by shifting from high speed gear at thirty miles per hour to middle speed gear at fifteen miles per hour. In the latter case the engine must act as a brake, and the entire machine is severely strained. With the Haynes transmission this cannot occur. A rachet and pawl device permit the car to coast until the speed of the car and engine are relatively equal, when the pawls engage and the engine takes up the load. While making the change in speed from high to middle or from high to low the gears are running idle, permitting the operator to shift with perfect ease and without danger of burring or stripping the gears. With all forms of transmission except the Haynes, the shock of sudden change of gears may be, and frequently is, thrown upon the machine, a thing impossible in the Haynes car, and one of the reasons why Haynes cars are so long lived and cost so little for repairs and up-keep.

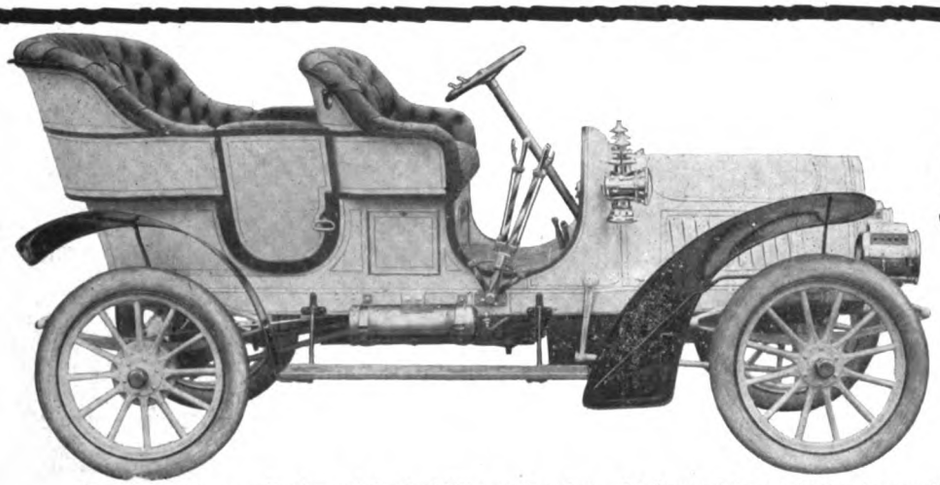
This is but one of the exclusive features of the Haynes. Others are its Roller-Bearing Engines, Master Clutch, Universal Joints that do away with wear on pins, Driving Sprocket and Roller Pinion, etc. There is perfect harmony throughout its entire mechanism, which makes its cost of operation, up-keep and maintenance extremely low.

It is perfectly finished in all respects. Only the best of tested materials are used. Body is of cast aluminum and wood, designed by a leading Parisian body maker. Hand-buffed leather and gray curled hair are used in upholstering. Other exclusive features are given in our new catalogue. For prompt attention address Desk 29.

"The Car the Repairman Seldom Sees."

HAYNES AUTOMOBILE COMPANY, Kokomo, Indiana

CHICAGO, 1421 Michigan Ave. Member A. L. A. M. NEW YORK, 1715 Broadway



Premier

"The Quality Car"

(AIR COOLED)

DECIDEDLY THE SEASON'S SENSATION

If orders are a criterion of desirability and value: if demand is an index to merit, the Premier for 1906 will meet with popular favor.

The car is not "freakish" in any sense, but is an elaboration of former fundamental Premier ideas, to meet the demand for a larger, more powerful, faster car.

It embodies a 20-24 H. P. motor, four cylinder, vertical, set longitudinally upon a pressed steel frame. Transmission of selective type, three speeds forward and reverse; shaft drive, bevel gear. Long wheel base, large wheels and tires, curved cast aluminum dash, sight feed precision oiler, full equipment of five handsome lamps, generator, and tube horn, together with full set of tools and tire repair outfit.

Body is of graceful tulip design, splendidly upholstered in best quality hand buffed, water grained leather, hair padded; comfortable, roomy tonneau, carrying five passengers without crowding; luxurious full elliptic springs with special shock absorbing head. It is a splendid, handsome looking car—one of the most ornate and artistic we have ever seen, *and fully as good as it looks.* Plenty of power, and all the speed you can use.

Two styles of touring car body on practically the same chassis, eacn offering phenomenal value.

$2,000.00 and $2,250.00 F. O. B. Indianapolis.

Send for catalogue and booklet (S).

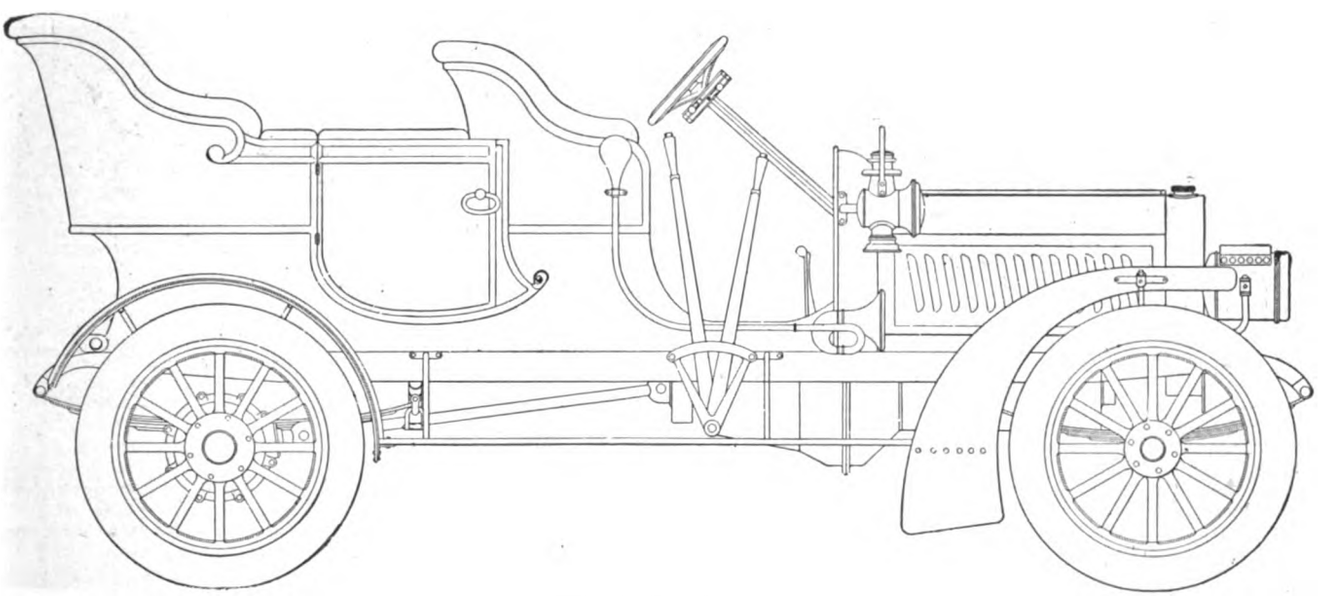
PREMIER MOTOR MFG. CO., - - Indianapolis, Ind.

Members American Motor Car Manufacturers Association.

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1906—ST. LOUIS—1906

"RIGS THAT RUN"



TYPE XVI

32-36 ACTUAL H. P.—$2500.

Our 1906 Type XVI is the crowning triumph of fifteen years experience in building gasoline automobiles. This model represents EVERYTHING GOOD in modern automobile construction. You cannot afford to pay more, and you couldn't expect to pay less. Compare Type XVI with any other car listing from $3,000 to $5,000, and we doubt if you will find any vast difference in other than the price. An agent should sell a car that will instantly appeal to all classes. Thousands of prospective purchasers are in the market, a few of them will insist on paying $5,000 and over—a few more will insist on $2,000 and under, but eight out of every ten will be the BETWEEN class, if they can get the satisfaction at a reasonable price. Type XVI is between the two extremes (in price), but from closest observation, we fail to see where it will not compare inch for inch with any car built in AMERICA. A FAIR, UNPREJUDICED COMPARISON IS ALL WE ASK. It will carry five people comfortably at any speed from four to fifty miles an hour, absolutely noiseless, no vibration, will negotiate 22 per cent grade on high speed. General finish, upholstering and trimmings cannot be surpassed—no matter what the price.

MOTOR. Four cylinder vertical, under hood, water cooled, developing 32-36 ACTUAL H. P. Entire construction highest grade. Muffler reduces noise to nothing. (Quietest car in existence.)

VALVES. All are mechanically operated, generous bearings Cramps special bronze throughout. Large fan behind radiator.

CRANK CASE. Made of special metal. Instantly accessible aluminum side plates allow instant inspection of connecting rod, crank shaft, etc. Full metal pan under engine.

FRAME. Specially prepared pressed steel, channel section, 4¾ inch tapered and reinforced. Motor and transmission integral assuring perfect alignment under all conditions.

TRANSMISSION. Sliding type, three speeds and reverse, all gears made of special high carbon steel. All shifts made withone lever. Clutch metal to metal, multiple disc, load is taken up gradually. No matter how sudden the shift is made the jerk is ABSENT.

CONTROL. New style rack and pinion, with ball and socket joints to take up all wear. Spark and throttle control placed conveniently under steering wheel, also accelerator foot pedal to use if desired for QUICK SPEEDCHANGES.

BRAKE. Three in number—any one of which will hold car on any grade. Same are controlled by both foot and lever at side of car. Application of foot brake throws out clutch, disconnecting transmission from motor.

AXELS. Front extra heavy dropped forged I beam, guaranteed not to spring. Rear axle of the floating type all equipped with Timken roller bearings throughout.

DRIVE. Bevel gear regular ratio three to one. We will furnish lower gearing upon request.

SPRINGS. Large half eleptic of the best quality obtainable. Front 38 inch, rear 48 inch. Three point suspension throughout, allowing perfect riding over the worst road conditions.

Our cars contain many individual features of merit, which we have omitted to mention. Our new elaborate catalogue explains every detail and will be mailed upon request. Fifteen years building experience has taught us the proper kind of material to use and how to use them correctly. We have simply covered the broad points of general construction that you may compare Type XVI with other makes costing nearly twice as much. Some cars may COST MORE—but none are better. We have not sacrificed one iota to cheapen our product. The material throughout is GOOD OLD ST. LOUIS quality from the ground up. Our name is on it and our guarantee back of it.

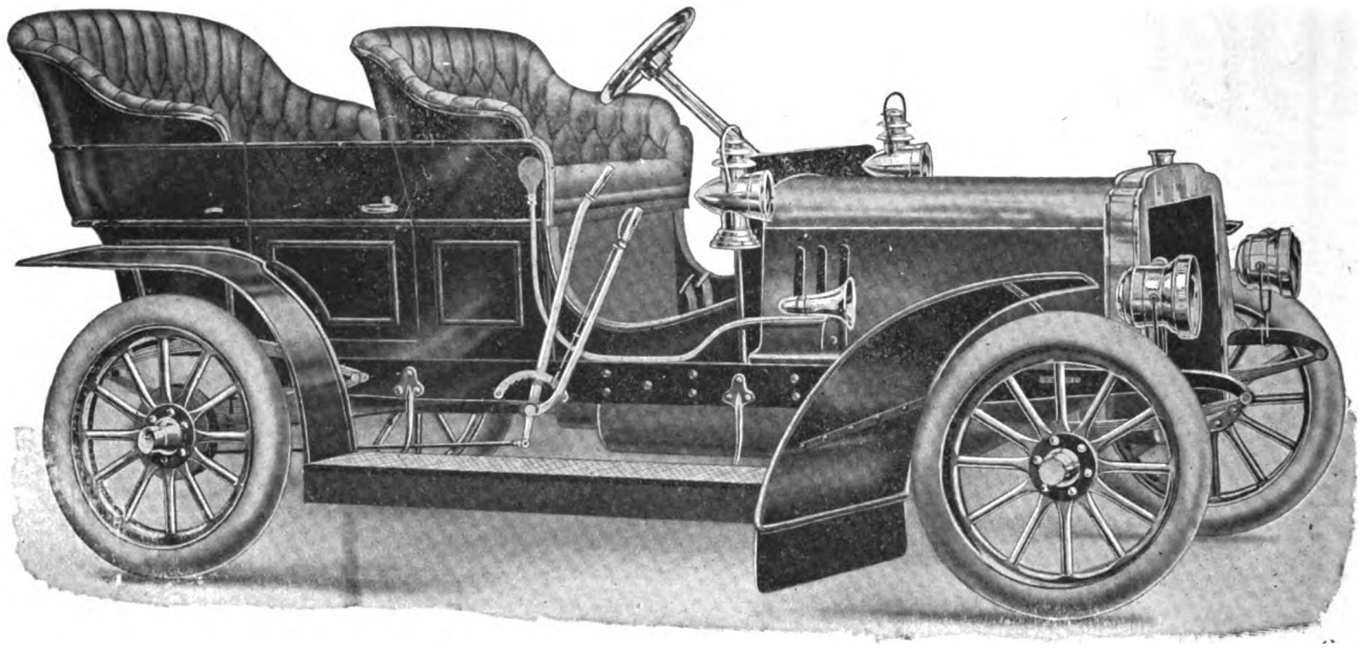
LASTLY. We are fast closing all available territory and our agency list will be closed solid before the New York show. If we are not already represented in your immediate vicinity, you had better write for printed matter AT ONCE. Don't wait until show time and be among the "ALSO RANS". Our agency proposition is most entertaining—it MIGHT pay you to investigate.

ST. LOUIS MOTOR CAR COMPANY, - Peoria, Ill.

SALES OFFICES: 1229-31 Michigan Ave,, Chicago, Ill.

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The Six-Cylinder Ford.



"Always a year or two ahead." When the single-cylinder car was "it" Henry Ford produced a double cylinder opposed motor, more powerful and at a lower price.

When the Automobile trade finally awakened to the possibilities of the two-cylinder opposed motor Mr. Ford produced a four-cylinder car at $2,000 that was in a class by itself, the public having been taught to believe that such a car could only be produced at a fabulous price.

And now, having exhausted the possibilities of the four-cylinder car in a touring car class, he has introduced it into the Runabout class, and in addition offers a six-cylinder car that is proportionately as far in advance of all competition as his first double opposed motor.

This is a wonderful car.

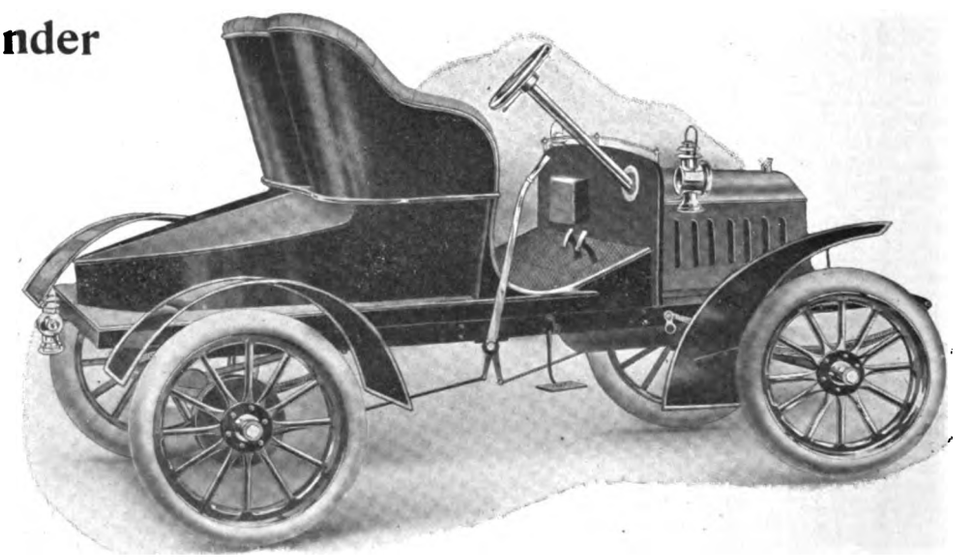
First, its six cylinders, with 40 horsepower, give a latitude of speed never before accomplished in a car of its class and weight, 2,000 pounds. From four miles per hour on a high gear up to fifty miles.

While one cylinder of this car will develop sufficient power to drive it along an ordinary asphalt pavement, the whole six cylinders inspire the driver with the confidence that there is an enormous latent energy in his motor, ready for any new demand without overloading the motor, making it the easiest controlled and most flexible automobile motor ever built.

When you have seen this motor in operation you will fully appreciate that we have the smoothest running automobile motor in the world.

Price, $2,500.00.

The Ford Four-Cylinder Runabout.



It is a fact that thousands of these cars are in course of construction.

Like all Ford cars, this one is a radical departure from previous and popularly accepted designs, and there is a reason behind every radical idea.

Henry Ford built a four-cylinder engine for his Runabout with fewer parts than the old-fashioned single-cylinder engine had, and the Ford Motor Co. have an enormous factory that does nothing but build motors for this Runabout, with a capacity of 100 complete engines every day.

The whole thing is very simple when you go about it right.

This is why we can build the Ford four-cylinder Runabout for $500.00.

We are making 40,000 cylinders,
10,000 engines,
40,000 wheels,
20,000 axles,
10,000 bodies,
10,000 of every part that

goes into the car. Think of it! Such quantities were never heard of before. We buy 40,000 spark plugs—10,000 spark coils—40,000 tires—ALL EXACTLY ALIKE.

The first Runabout (Model A) we built cost $30,000—yet we sold duplicates of that model for $750.00.

It is the quantity that counts.

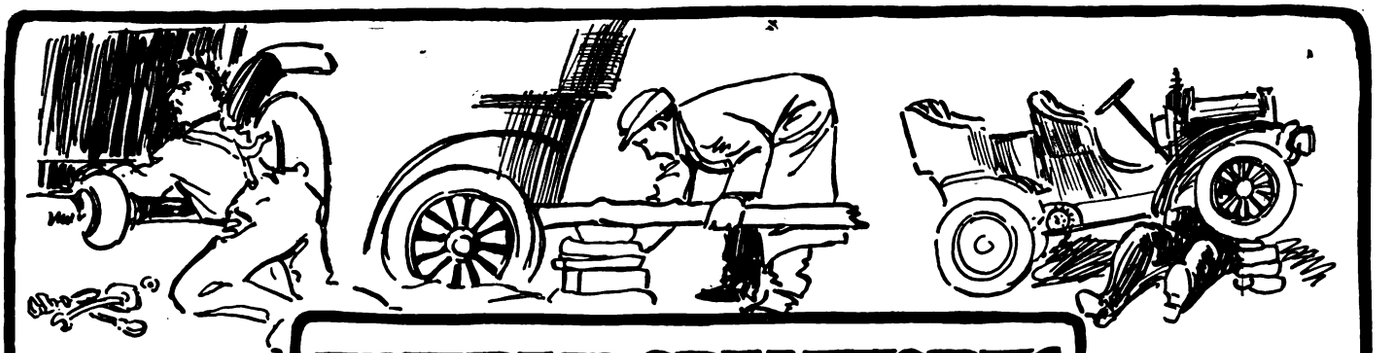
FORD MOTOR COMPANY, Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1721 & 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia 1413 Michigan Ave., Chicago; 1916 S. E. Euclid St., Cleveland; 308-310 E. 11th St., Kansas City.

Canadian Trade supplied by Ford Motor Co of Canada, Ltd., Walkerville, Ont

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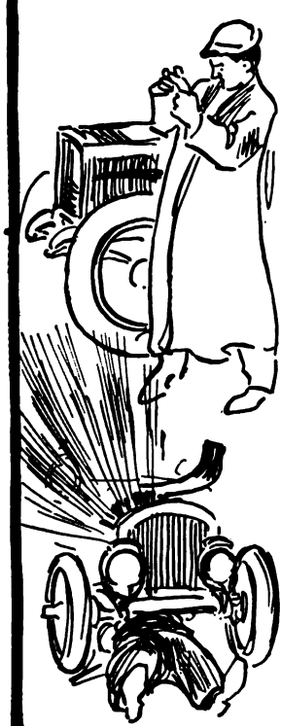


EVERYBODY WORKS BUT FATHER— HE DRIVES A

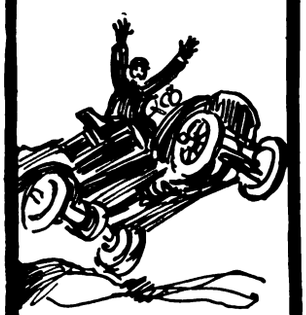
CADILLAC



Model M. Single Cylinder Car, $950.00.











AND THERE'S A LOT OF TRUTH IN THIS, AT THAT

1906 ANNOUNCEMENT SOON

MotorAge

CADILLAC MOTOR CAR CO.
DETROIT, MICH.

Members of Association Licensed Automobile Manufacturers.

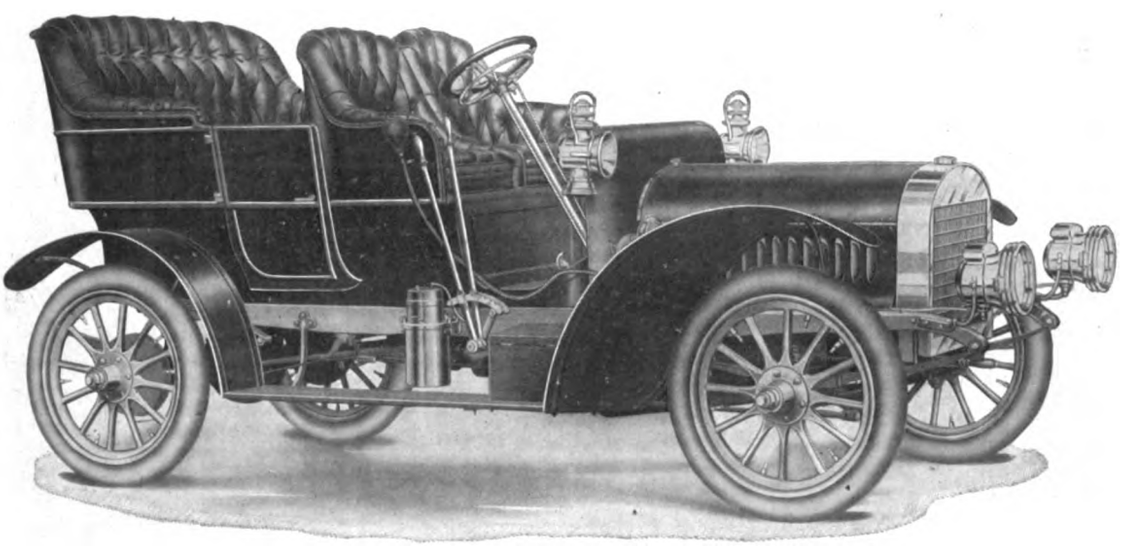
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This is the

Rambler

Model 14,

$1750.



Its qualities are too many to enumerate here and if the outside looks good to you, our catalogue and the Rambler Magazine giving full details of this and six other models are at your service.

Thos. B. Jeffery & Co.

Main Office and Factory - - - - Kenosha, Wis., U. S. A.

Branches

Boston, 145 Columbus Ave.
Philadelphia, 242 N. Broad Street.
San Francisco, 10th and Market Streets.
Chicago, 302-304 Wabash Ave.
Milwaukee, 457-459 Broadway.
New York Agency, 134 W. 38th St.

BRANCHES IN ALL LEADING CITIES.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, January 4, 1906. No. 15

DEVELOPMENTS IN DIAMONDS

Akron Manufacturers Present Some Unexpected New Things in Tires and Tubes.

Those "gentle intimations" which during recent weeks have radiated from the Diamond Rubber Co., and which indicated that there would be "something doing" when the Diamond's 1906 announcement was made, "came true" late this week. It then became known that the Diamond Rubber Co. have not less than four distinctly new developments in tires ready for presentation to the public.

There is a brand new solid tire and a flat tread pneumatic tire, but from the standpoint of general interest probably what is termed the Diamond Diaphragm tube constitutes the most sensational departure. In brief, this is a tube within a tube. If the outer or normal tube is punctured, the inner tube or emergency tube can be inflated without removing the tire from the wheel. The outer tube can be repaired in the usual way and made to serve again and again. The interior tube is for emergencies only. The Diamond flat tread tire is of the regular Diamond wrapped tread construction, with an extra thick tread made perfectly flat. The extra thickness increases the wearing possibilities of the tire and the flatness of the tread tends to prevent slippiny and skidding.

The Burnham tire protector also is something of a novelty. It consists of a heavy shoe of rubber and fabric much resembling a tire casing without the beads or clinchers by which a tire is secured within the rim. The shoe is placed over and around a worn tire, and when the latter is inflated the shoe is held immovably in place. In effect this protector amounts to a tread which can be removed or applied at will.

While enthusiastic over all their productions, the Diamond people are particularly enthused over their new solid tire, which they believe marks a new era in that department. This new tire has what is known as a wire mesh base, one of the advantages of which is that it can be attached to a wheel without the aid of machinery. The side wire type of solid tire also will be retained, and, almost needless to add, the famous Diamond wrapped tread detachable clincher tire, which outwardly differs little, but which nevertheless has been improved by reinforcements and a tougher tread.

Whiting to Succeed Brock.

When M. I. Brock drops the reins as sales manager of the Autocar Co., Ardmore, Pa., to become assistant manager of the Association of Licensed Automobile Manufacturers, they will be taken up by Allen H. Whiting, who has been selected to fill the vacancy. Mr. Whiting, who is a brother-in-law of A. L. Riker, of the Locomobile Company, is no stranger to the trade, having been sales manager of the Edison Storage Battery Company. Previously he was connected with the Electric Vehicle Company and the Lansden Company.

End of the American.

The Prudential Trust Co., as receiver for the American Motor Carriage Co., of Cleveland, Ohio, has filed its final report and closed up the affairs of that concern. The statement shows that the cash on hand, according to the report of October 29, 1904, was $18,765.27. A dividend of 30 per cent. was paid the stockholders, which amounted to $18,314.69. The remainder was paid out as court costs and for records.

Extending the Berkshire Branches.

The Douglas Andrews Company, sole distributors of the Berkshire cars, have practically completed arrangements for the opening of branch houses in Boston and Chicago. The latter will be in charge of N. H. Van Sicklen, Jr. The Andrews people already have a branch in Pittsfield, Mass., and, of course, headquarters in New York.

Picard to go to Philadelphia.

In addition to the new place in Chicago, the Ranier Company are making ready to open a branch house in Philadelphia. A. J. Picard, who recently resigned the sales management of the Walter Automobile Company, will be installed as manager.

"CLUB GARAGE" UNCOVERED

Its Sponsors Located by The Motor World—Their Story of Their Big Project.

Coincident with the issue of a tastefully printed prospectus by the "Club Garage of America" giving as its address, 51 Broadway, the Automobile Club of America apparently deemed it advisable to again call attention to the fact that there is no connection between this projected garage and the A. C. A. garage which is now being built for the club uptown; the notice reminded the members that the club has not indorsed the "Club Garage of America" and warned them that there appears to be a desire on the part of the promoters to trade on the name of the organization.

As this was the second notice of like import that had emanated from the Automobile Club of America, and as the printed matter of the "Club Garage" was suspiciously barren of names it appeared that fire must be lurking amid the smoke.

"Room 41, at 51 Broadway," which is the building of the Wells, Fargo Express Company, proved to be the office of the St. Louis Car Company; the door bears this sign, also the title "The Club Garage of America.—D. M. Harvey."

When approached by a Motor World man and asked for explanations, Mr. Harvey was found quite worked up over the A. C. A. warning. He immediately disclaimed any intention of trading on the name or repute of the Automobile Club of America.

"This is not a brand new scheme that has just cropped up overnight, or within a month or two, as this notice would seem to imply," said Mr. Harvey, with considerable heat. "It is practically a year ago that the Club Garage of America was incorporated under the membership corporation law of the State of New York as a co-operative organization—sometime before the A. C. A. had decided to build its own garage. I do not wish to claim any credit for it, but, as a matter of fact, it was not until they determined not to entertain my proposition that the club voted to build its own garage.

"With George Kobusch, president of the St.

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Louis Car Company, as my financial backer, I proposed to the A. C. A. to put up a building the greater part of which was to be used by them as a garage, while I was to use a portion of the same place, but entirely independent of them, for the same purpose, that is, a public garage.

"They were to have all the space they required for storage and other purposes and nothing but their own sign was to be used on their part of the building, facing on Broadway, while an entrance on 62d street was to be used for the remainder. The club declined my proposal, but it did not cause the collapse of my plans.

"To show you that there is something more substantial than air back of the project, here is the lease of the northeast corner of 62d street and Broadway from George C. Boldt to Mr. Kobusch personally. It is to run for ten years with the option of a renewal for the same period, and a contract already has been placed with the General Supply and Construction Company for the erection of a six story and basement building to be completed by May 1 next. It will be of reinforced concrete construction, and will have 13,350 square feet of space on each floor."

Mr. Harvey exhibited the lease in proof of his statement. He also stated that Leander Richardson, Editor of the New York Inquirer, a weekly publication of the "gossipy" type, is president of "The Club Garage of America." This is the language in which the prospectus outlines the project:

This organization has been formed to lift a great weight from the pleasure of motoring, and bring within reason the expenses attached to keeping cars in proper condition.

The main objects of the Club Garage are to keep machines in first-class condition and to put a stop to extortions that are known to have been practised.

Another aim of this organization shall be to supply efficient and safe chauffeurs. The club has subscribed to a clipping agency for all matter printed in reference to automobile accidents, and these accidents will be investigated to determine whether or not the chauffeur is responsible. By this method it will be possible to eliminate all undesirable and unsafe men. Waiting rooms will be provided for chauffeurs on duty, with direct telephone communication.

In order that you may know that your machine is not being used by others, especially your chauffeurs, without your permission, a record will be kept of every time your machine goes out and how long it is gone. A duplicate of this will be mailed you every day.

The Club Garage will not under any circumstances pay commissions to chauffeurs on the purchase of any supplies, equipment, repairs, etc. This is one of the most extravagant evils of motoring, and can only be eliminated through the instrumentality of an organization of this character, which has been formed solely to protect its members by conscientious service and respect for their rights.

The receipt system will be used entirely.

The services of the Club's legal agent will be at the disposal of members day and night for the purpose of furnishing bonds, etc.

The Club Garage of America will operate garages of similar character in Boston, Philadelphia, Chicago, St. Louis, etc., and branches at the principal resorts during the season. The courtesies of membership are interchangeable, thereby assuring you a uniformly high-class service wherever you go.

By joining in this movement you can aid in placing motoring on a business basis, whereby the expenses can be kept within a reasonable limit and the efficiency and service at least doubled.

Initiation fee for membership in the Club Garage of America is $25. There will be no dues except storage fees, etc.

In the Retail World.

The White Sewing Machine Company have established branches in Troy, N. Y., and New Haven, Conn.

John Pflieger, 1602 Bushwick avenue, Brooklyn, is establishing a garage at that address.

Snyder & Smith, Orange, N. J., have added an electrical charging and repairing plant to their establishment. It measures 80 by 40 feet.

The latest addition to the Philadelphia automobile dealers is the Hamilton Automobile Company, located on Broad street, above Race. They will handle the Stoddard-Dayton.

Plans have been filed with the Manhattan Buildings Bureau for the remodelling of the two story and attic stable at 347 Amsterdam avenue, New York City, into a garage for Eugene Meyer, jr.

Nolan & Smith, Los Angeles, Cal., are having built for them on Main near Tenth street, a steel and brick garage. It will be one-story high, measure 85x174 feet, and cost about $15,000.

A brick addition, 40x85 feet, is being built to the two-story building at 535-537 South Los Angeles street, Los Angeles, Cal., for Richard P. Blaisdell. It will be used for a garage and will cost $9,000.

Edward Borderwisch has been elected president of the recently incorporated Borderwisch-Glancey Automobile Co., of Dayton, Ohio. Dr. I. Y. Cooper is vice-president, and E. M. Glancey, secretary-treasurer.

The Lowell (Mass.) Automobile Corporation has changed hands. N. D. Goff has withdrawn, and Harry Noyes and William H. Greene, formerly connected with the business, will be associated with H. H. J. Read.

The firm of Clark & Matthews, machinists and electricians, Rutland, Vt., has taken O. H. Coolidge into partnership and changed its name to the Rutland Machine & Automobile Co. A new plant is contemplated.

John E. Lloyd has leased the new three-story and basement building at No. 220 West Thirtieth street, New York City, for a long term of years at an aggregate rental of $60,000. It will be used as a garage.

George C. Boldt, proprietor of the Waldorf-Astoria, has sold the 116x106 northeast corner at Broadway and Sixty-second street, New York City, to the American Co. A six-story garage will be erected.

The Chadwick Motor Company, which has just been incorporated, will locate on 34th street, New York, in the former Decauville establishment. The Chadwick car will be handled. C. S. Jackson, former manager of Wanamaker's automobile department, will be the active man in the new concern.

The Maine Motor Carriage Co., of Portland, the oldest agency in the State of Maine, has so outgrown its present location at 44 Plum street that it has been forced to erect a new garage, which is now in course of construction at the corner of Free and South streets, convenient to hotels and theatres. It will be open night and day. The Maine Motor Carriage Co. has also made a change in its line, having taken on for 1906 the Thomas, Stevens-Duryea and Olds.

The Week's Incorporations.

Syracuse, N. Y.—Brown Lipe Gear Co., under New York laws, with $150,000 capital. Corporators—A. T. Brown, Willard C. Lipe and Penfield Chapin.

Bay Shore, L. I.—Covell & Crosby Motor Co., under New York laws, with $20,000 capital. Corporators—A. A. Crosby, C. H. Covell and W. M. Allison.

New York City, N. Y.—Chadwick Motor Car Co., under New York laws, with $50,000 capital. Corporators—A. W. Pross, C. E. Reed and George Muirer.

Brooklyn, N. Y.—Carlson Automobile Co., under New York laws, with $15,000 capital. Corporators—C. A. Carlson, Chalmers Dale, Jr., and C. W. McKelvey.

New York City, N. Y.—Ansonia Automobile Co., under New York laws, with $5,000 capital. Corporators—E. G. Potter, G. R. Kelso and F. W. White.

Boston, Mass.—Boston Auto School, under Massachusetts laws, with $5,000 capital; to conduct automobile school. Corporators—W. E. Cooper and E. F. Edwards.

Brooklyn, N. Y.—Hicks Speed Indicator Co., under New York laws, with $3,000 capital; to manufacture speed indicators. Corporators—E. P. Hicks, C. R. Johnson and Carl Knoff.

Watertown, N. Y.—Watertown Automobile & Supply Co., under New York laws, with $5,000 capital; to deal in automobiles and supplies. Corporators—Lincoln G. DeCant, Merley A. Pitcher and Joseph A. McConnell.

New Orleans, La.—The Tracy Automobilium, under Louisiana laws, with $50,000 capital, to deal in automobiles. Corporators—W. J. Tracy, William P. Tracy, William Bradley, L. A. Ducros and A. D. Henriques, Jr.

Salt Lake City, Utah.—Sharman-Ottinger Automobile Co., under Utah laws, with $25,000 capital; to deal in automobiles. Corporators and officers—President and treasurer—Samuel H. Sharman; vice-president, Adolph Ottinger; secretary, A. Scheider.

Montgomery, Ala.—Van Dusen Motor Car Co., of Jefferson County, under Alabama laws, with $25,000 capital. Corporators—A. S. Kahin, E. W. VanDusen, Jr., C. S. Creelman, R. D. Johnston, Jr., and B. C. D. VanDusen.

A delegation of forty Mormons, headed by President Joseph Smith, visited Kenosha, Wis., Thursday, of last week, and were taken through the factory of Thomas B. Jeffery & Co. One of the party was Norris Farr, who proudly boasts of eighty grandchildren. Whether Mr. Farr ordered Ramblers for the little runabouts is not stated.

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HOW EXPORTS ARE SWELLING

October Shipments Still Further Increase the Handsome Total—Where Goods are Going.

Judging from the second detailed monthly report, American automobiles are going strongest in England and the British possessions, as next to the English item of $27,005, comes British Australasia, with $25,571—the largest items on the list—and British North America with $11,996. The only others approaching these are Other Europe, with $15,085, and Mexico, $12,738.

As compared with October a year ago, the increase is relatively substantial—slightly in excess of 25 per cent., though actually not very large; from $106,117 to $129,389. But in the case of the totals for the period of ten months ending with October in the past three years, the increase is vastly greater, the amounts being $1,419,481 for 1903, $1,682,994 for 1904 and $2,449,010 for 1905.

The detailed report for the month of October and for the ten months ending with October, 1905, is as follows:

Exported to—	October.	10 Months Ending October.
United Kinguom	$27,005	$631,787
France	8,028	262,058
Germany	1,808	103,806
Italy	5,580	159,905
Other Europe	15,085	237,902
British North America..	11,996	513,761
Mexico	12,738	162,780
Other West Indies and Bermuda	6,809	131,361
South America	6,974	55,912
British East Indies	2,495	31,097
British Australasia	25,571	111,119
Other Asia and Oceanica.	287	60,878
Africa	4,791	33,528
Other countries	222	3,116
Total	$129,389	$2,499,010

The Garage Keeper and the I. O. U.

When it was announced that an anti-graft law had been passed at Albany the sufferers from the wiles of the importunate chauffeur heaved a mighty sigh of relief for they thought in their simplicity that their troubles from that source were at an end. Bright young manhood refuses to be squelched, however, and now the man in the leather coat, who formerly levied direct tribute from the garage keeper, borrows from him small sums of the needful, giving in return his modest little "I. O. U," which, at the end of the month, the downtrodden G. K., above mentioned, twists up tightly and uses to light his pipe, in which capacity it serves a useful end, and seems to infuse a taint of sober reflection into the fumes of the bowl.

Evidence of French Fearfulness.

France is awaking to the fact that America has sapped the foundations of her trade in more ways than one and that unless something be done the structure is apt to topple. The publishers of L'Auto, the official organ of the Automobile Club of France, and the semi-official representative of a number of manufacturers, have accordingly decided to establish in New York "a bureau of information," a sort of private consulate as it were, to keep an eye on American trade conditions. The idea is to aid the French maker in taking advantage of the American market. Georges Dupuy, a well known explorer and writer on sports, has been delegated and will have charge of the bureau, which will have to do not alone with the importation of French cars, but also with the exportation of American cars to France.

Rogers' Wide Sweep of Country.

G. Vernor Rogers, secretary of the Mitchell Motor Car Company, Racine, Wis., touched New York last week in the course of a sweep around an unusually wide circle; in fact he probably has covered more territory during the last few months than any other man in the automobile business. His route carried him through the South and to Cuba; then to the Pacific Coast, which he traversed from Seattle to Los Angeles, and then to New York. As a result, the output of the Mitchell Motor Car Company is practically sold.

With conditions in general Mr. Rogers was more than satisfied and he spoke in high terms of the future of the Northwest as an automobile centre. His mention of streets a quarter of a mile wide rather staggered his hearers, but when he explained that over the hard, level prairie a driver could make his own road the meaning was made plain. He also stated that the prairie turf is so hard that the rains, even through the long rainy season, do not effect it and in consequence there is good driving the year round.

Landgraf Obtaining More Room.

Landgraf Brothers, or rather the Simplex Automobile Co., who build a car by that name at Mishawaka, Ind., are enlarging their plant. Another story is being added to the present building, and two two-story additions measuring, respectively, 50x24 feet and 70x24 feet, are in process of construction.

Pontiac Chooses Its Officers.

The Pontiac Motor Co., recently organized in Detroit, Mich., to manufacture commercial and combination commercial and pleasure motor vehicles, have elected the following officers: President, Dr. H. V. Welles; vice-president, George E. Fisher; secretary, Albert Burton, and treasurer, F. I. Perry.

Was Wheeler, Now Rands.

The Wheeler Mfg. Co., Detroit, Mich., makers of tops, has changed its corporate name to the Rands Mfg. Co., after W. C. Rands, its manager. In all other respects the concern remains the same.

The Ruggles Automobile Company, of Ware, Mass., has completed its first car. It is a delivery wagon and will be tested by a local butcher.

BILL FOR FREE ALCOHOL

Introduced into Congress for Third Time—What it Proposes and the Stumbling Block.

What is thought to be the beginning of the end of the three years' campaign for free alcohol backed by a number of the most powerful industrial interests in the country, was brought about last week by the introduction of a bill to that effect before Congress by Representative Calderhead. This is the third time the matter has been brought before Congress, only to be sidetracked and lost in the mass of proposed legislation which comes up for consideration annually, but which seldom sees the light. In the present instance, however, its introduction is the culmination of an educational propaganda on a scale rarely resorted to as a means of influencing legislation and only possible to large interests, for more than $50,000 has been spent in the preparation and dissemination of literature on the subject, principally in agricultural communities.

There has been considerable difficulty in convincing the "solons" at Washington that the public revenues were not in danger, and that the measure was not one on which the "booze" interests took an antagonistic stand. The excessive tax of $2.07 per gallon on commercial alcohol has practically prohibited its use except for such purposes in which denaturized alcohol is not available. Another difficulty was the matter of regulating the process of denaturing the alcohol and prescribing what substance could be employed, and it will be noticed that this has been left entirely to the Secretary of the Treasury.

The provisions of the bill are as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

That on and after the passage of this act no internal revenue tax shall be levied or collected on ethyl alcohol of domestic production which has been rendered undrinkable or unfit for use as a beverage, prior to withdrawal from distillery bonded warehouse.

Sec. 2. The Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall prescribe the necessary regulations to carry this act into effect.

Sec. 3. That any person, or persons, who shall rectify or purify ethyl alcohol which has been removed from distillery warehouse free of tax, under the provisions of this act, so as to remove or separate therefrom by any process whatever the substance, or substances, which have been added thereto for the purpose of rendering such ethyl alcohol undrinkable or unfit for use as a beverage, shall, on conviction, be subjected to a fine of not less than five hundred dollars nor more than five thousand dollars, and be imprisoned not less than six months nor more than three years.

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FISK TIRES



SAVE TIME, MONEY AND TEMPER

WITHOUT Fisk Tires you are simply wasting Time, Money, Temper,—and Comfort. They are the only tires constructed on Strictly Scientific and Practical Principles.

Positive Locking Device, insuring SAFETY
All Air Above the Rim, affording COMFORT
Superiority of Quality, guaranteeing DURABILITY

Our production for '06 is the finest that we have ever offered, representing, not merely high-grade exterior evidences, but Honest Quality—"Fisk Quality" that is at present unsurpassed.

Truly, 'twill be Worth Your While To Buy Fisk Tires.

We should like to send you a little printed article on tires

THE FISK RUBBER CO.,
Chicopee Falls, Mass.

CADILLAC UTILITY

THE SINGLE CYLINDER CADILLAC
Will climb any hill that any automobile will climb.

THE SINGLE CYLINDER CADILLAC
Will travel any road that any automobile will travel.

THE SINGLE CYLINDER CADILLAC
Will travel as fast as anybody ought to ride.

THE SINGLE CYLINDER CADILLAC
Costs less to operate. Costs less to Maintain.
Requires less attention than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined, and won for them the unquestioned distinction of

AMERICA'S LEADING MOTOR CARS.

CADILLAC MOTOR CAR CO. - - - - Detroit, Mich.

Members Association of Licensed Automobile Manufacturers.

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JANUARY 13-20, 1906

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THE

NEW YORK

SHOW NUMBERS

of

THE MOTOR WORLD

Will Bear Dates

January 11th and 18th.

As always, they will deal with the subject intelligently and well and be thoroughly representative of the industry.

Giving the Devil his Due.

Due to the occurrence of the occasional accident, which from the prominence of those who suffer the consequences is given wide publicity under scareheads inveighing against the criminal recklessness of the automobile driver has become general. That there is ample cause for at least a portion of the tirade that springs into new life the country over under frequently recurring stimulus, cannot be controverted, but if the numerous reports of mishaps that give rise to eloquent editorial flights on the part of the wielder of the pen to "abolish these rampant juggernauts," be carefully investigated, the conclusion is inevitable that the amount of smoke is utterly disproportionate to the fire behind it.

Apart from the fact that more attention is accorded one trivial accident in which an automobile is concerned than three fatal horse runaways, it is really about time that the "devil got his due." The chauffeur, even though he be the "imported reprobate" who is credited with stopping at nothing short of murder and arson, is only a human being and to state that he becomes transformed into a monster merely through the act of seating himself at the wheel of a high powered car is childish. More than that, he is only a servant. While the accident occurs while the car is under his sole guidance it may be taken for granted that the disaster was due to a disregard of common sense on the part of the driver, if nothing worse, and facts have borne this out in such a number of instances that it has come to be looked upon as a conclusive presumption. It is merely the old, old story of "when the cat is away."

But when the owner of the car is in it, his servant must do as his superior wills. The importance of the chauffeur is usually much exaggerated, and the fact that he must obey orders and disregard his own judgment as if he had none is too often overlooked. Except in the case of the owner who is dominated by his chauffeur, and the latter incumbent frequently takes his cue from the ruler of the kitchen, the car is virtually under the control of the man who pays the bills, and a refusal to carry out orders would simply mean the necessity of seeking another berth. The owner is at all times morally and legally responsible for the acts of his servant, and the fact that disaster and death follow compliance with his orders by the chauffeur should certainly not be cause for casting the onus entirely on the latter. There is scant doubt that he sins as much as if not more than, he is sinned against, but it is at least fair that the faults of his master should not be laid at his door as well.

The Men at the Show Stands

As the maker's plans for the show season are being matured and his preparations brought down well toward a state of completion, there is one matter which should not escape his attention, and one which, trivial and unimportant though it may seem, is by no means of slight import to his interests. He may have upon his stand the best of machinery, tastefully displayed and well finished; he may have prepared the public for its reception of his various little "surprises" with all the assiduity which is possible in a well planned advertising campaign; he may have a good location, good surroundings, good neighbors and good attendance, and yet fall far short of the mark which he has set down as a probable result of the week's business, if he has not also taken the greatest of pains to train and properly equip the staff of assistants who are to handle the tiresome business of explaining and demonstrating his wares to a weary and footsore public.

The task of repeating an explanation of a certain train of comparatively simple mechanism over and over again through the entire duration of the show season is by no means an easy one. Every exhibitor is straining his every nerve to capture and hold the attention of the visitor. The visitor, whether he means "business," or whether he is prompted merely by idle curiosity, soon becomes wearied of the strain of submitting to a tedious cramming process and soon enough ceases to accept with credulity and interest the usual statements as to excellence of quality and perfection of workmanship. He wants to know what is new; he wants to know "how it works," and upon the demonstrator devolves the troublous task of determining whether or not he is worth considering in the light of a probable purchaser, or whether he is merely being amused.

Because of the drudgery which is connected with this task many exhibitors are wont to put upon their stands one or two young men who are notable for their glib tongues and their ability to parry embarrasing questions. Such as these are to be seen at every show in far too great abundance, either for the gratification of the earnest public which has come to be shown, or the maker who has come to show. Often

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enough they are but little acquainted with the business, know far too little of the details of the machine they are attempting to demonstrate and are apt to be inclined toward freshness, and have a leaning toward the fair sex, when evening comes and the real work of the day is to be done. Such youths, either through lack of knowledge or sheer inefficiency, frequently turn away an inquirer with an insufficient answer, leaving him to shift for himself, or, if he be persistent, give him such a smart rebuff that he is fain to leave forthwith. Others, in a desire to shine as great white lights in the business, tell all they know and a great deal more, revealing in the process some most astonishing gaps in their fund of information.

That it is almost as difficult a task to find good show men at reasonable prices as it is to perform well in the capacity itself, is known only to those who have been through the mill themselves. The average maker is loath to break up his force for so short a time and cart around with him a lot of men who would be worth more to him in the shop than on the road. And again, he is hampered by the fact that the men who are most fitted with the technical knowledge, usually cannot tell what they know in intelligible language. His office force, on the other hand, knows little or nothing of the mechanical end of the business, as a rule. Hence, in many cases, he feels obliged to pick up some hanger-on at the show as a demonstrator, trusting to him to turn over to some of the regular salesmen such of the flotsam and jetsam as seem likely to prove worth talking to. The result, however, is not always of the best, from the credit standpoint.

Probably the best demonstrators and salesmen are those who have "graduated" from the shops and have undergone a considerable training on the road. They are not easy to find, except in the pseudo type, which is never stationary in any capacity long enough to learn its ins and outs, nor are they easy to procure as a general thing, for those who are worthy are always fully engrossed at show time. Whoever they be, they must be gentlemen, in the sense of white linen and black shoes; they must be polite, and patient, and intelligent; they must be well informed on the whole of the business, and, above all, they must not be "knockers." The show attendant may seem of less importance than the show, but he is a factor to be chosen with care and trained with precision.

Concerning Prompt Deliveries.

Prompt deliveries have ever been the guiding star of the most successful manufacturers and they obviate a deal of worry as well as the necessity for much diplomatic lying on the part of the agent who has to act as the go between to pacify the customer anxious to possess his new car. But good intentions even when backed by well laid plans based on the output of ample manufacturing facilities often become impossible of fulfilment long before the time comes to carry them out. This has been the case in every selling season during the past three years and there is no reason why the cry of "cars, send us the cars," will not rise from the agent all over the land before 1906 is far advanced.

True, most of the larger makers had their plans for 1906 cars worked out and the cars themselves on the road in the hands of testing crews months in advance of the time that this was considered necessary in previous years, and hundreds of cars of next year's model have been turned out—a goodly number of them sold—long before the close of the present year. This, as a rule, is only possible with an organization complete enough to build the car from the ground up, and there are not a great many such. There are, in fact, comparatively few makers who do not now rely upon the partsmaker for at least some of the components of their vehicles.

The parts specialist fills a gap not provided for by any other factor in the manufacturing economy of the small builder and it is not too much to say that without him the same number of makers could not flourish. But he is apt to prove a thorn in the side during the coming season, for, overwhelmed with orders, the matter of deliveries is bound to be a bone of contention and few of the dates contracted for are apt to see the arrival of the parts at the builder's factory. "Held up for parts without which it is impossible to ship the car" is not at all likely to be given as an excuse to the buyer, but whatever form the jollying condolence handed out by the agent to smooth over the impatience occasioned by enforced waiting, this will be in numerous instances the substance of the hidden reason.

Refinement Rather than Experiment.

While it is evident beyond the shadow of a doubt that the cry of those who predicted radical changes of many kinds in this year's cars has been utterly refuted by what has already been brought to light both here and abroad, it must not be concluded that the detailed changes chronicled are merely matters of personal taste on the part of the various designers.

The seeker after novelties at either of the foreign shows must have come away disappointed, for there was a decided lack of innovation in evidence, whether on the part of old established houses or of newer and smaller builders, who are more prone to bring forth such attractions. Further, the instances in which any departure from previously accepted standards were present were so far from being numerous that it was necessary to sift a great deal of chaff to find any wheat—the searcher found it incumbent upon him to inspect a great many cars and to look them over closely in order to discover their distinguishing features.

Nevertheless, when the detail uncovered here and there is added to that discovered on all as a whole, it will be found that there is more or less food for reflection on the part of the designer and that several modifications of what has hitherto been considered as settled practice are due to pass through the test of daily use on the road for the next six or eight months. Considered in the aggregate, it must be conceded that the occasional departure was so slight in many instances that none but a keen observer, familiar with all that has gone before, would be competent to detect it or to recognize in what respect it differed.

It would appear that not a few builders have apparently come to the conclusion that the most profitable policy by far is to let well enough alone, and the great measure of success attained in the last year, both mechanically and financially bears this out so strongly that it were folly not to take advantage of the precedent thus set.

Some sagacious personage would have it that when you have taken a piston out of its cylinder for any reason the proper thing for you to do before you put it back is to turn it down around the head a little bit, so that it will go back again more readily than it otherwise would. That may be true enough, but if you do, you had better order another can of compression before you start in, as you will be likely to need it before you have finished.

No word is forthcoming from France to say whether the light runabout which was thrown together in four hours and then driven over 750 miles of country road in less than sixty-two hours was afterward relegated to the scrapheap or preserved for exhibition as a relic.

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HERE'S THE MOTOR COMEDY

It's Written Around the Vanderbilt Cup and Oldfield Will Help Supply the Thrills.

The automobile play has "arrived." It will stage under the title "The Vanderbilt Cup," an "eight cylinder musical comedy, with three shoes and eight tubes." It is now on the road—"being tried on the dogs," is the theatrical expression—preparatory to its presentation at the Broadway Theatre, New York City, during the automobile shows. It is billed for two weeks hence, when "Veronique" will vacate the Broadway.

Although their names do not appear in the cast it is understood that Barney Oldfield and Tom Cooper will make their debut as real actormen and supply the climaxing thrill in the second act, which represents the scene in front of the grandstand at Mineola at the finish of the race for the Vanderbilt Cup. These two racing "cracks" will drive real racing cars on rollers and to give the touch of realism to the scene the moving picture machine will be brought into play. It will be remembered Oldfield went through a fence—it was a paper one, though—at Poughkeepsie last summer, while a moving picture camera recorded it. The cast includes some well known stars and catchy songs without limit. There will also be lots of ulsters, leather caps, goggles and the like. Miller, the New York supply man, having furnished some $400 worth of such "artistic touches."

Some idea of the magnitude of the elaborate production may be gleaned by a perusal of the artists in the cast as well as the synopsis of scenes:

Newt. Offut, a hill climber, Will T. Hodge; Mrs. Willetts, mother of Dorothy, Grace Gaylord Clarke; Theodore Banting, an equitable attorney at law, and other things, Otis Harlan; Miss Carstairs, Dorothy's music teacher and chaperon, Marie Stone; Dorothy Willetts, Elsie Janis; Dexter Joyce, a lightning conductor, Aubrey Boucicault; Clerk of the Marjorie Wellington Hotel, Charles Abbe; Mrs. Hillrave, Blanche Chapman; Mrs. Sylvester, Kate Mayhew; Mrs. Filestrom, Grace Griswold; Mrs. Herkimer, Blanche River; Mrs. Dillenberg, Sallie Berge; Mrs. Ostrand, Marie Messner; (Stockholders in the Marjorie Wellington Hotel, known as the Six Crusty Dames.) Winnifred, first bell girl of the M. W. Hotel, Violet Duval; Gwynne, second ditto, Edith Spofford; Pearl, third ditto, Margaret Love; Celeste, elevator girl of the M. W. Hotel, Kate Buckley; Kate Crooks, the porter, Ella Hatten; Inkie North, Western Union Messenger girl, Lilliam Nicholson; Gaspard, an honest French chauffeur, Henry Bergman; Curt Willetts, who "got rich quick"; uncle of Dorothy, Henry V. Donnelly; Clarinda Larkspur, who objects to a speed limit, Edith Decker; Senator Boxwood, of the State of Washington, Jacque Kruger; Arthur, his chainless hopeless, F. Newton Lindo; Rose, Dorothy Kent; Lily, Annette Steele; Violet, Eloise Steele; Pansy, Elsa Rhinhard. (Four flowers of the comic opera.)

Synopsis of Scenes—Act. 1.—Scene 1. The Willetts's Home—(No Gasolene). Scene 2. En Route to New York—(Get a Horse). Scene 3. The Marjorie Wellington Hotel, New York City—(An Up-to-Date Garage).

Act 2.—Scene 1. The Veranda of the Garden City Hotel, L. I.—(The Perfect Clutch). Scene 2. Parking place at Mineola, L. I.—(Space $50 a foot). Scene 3. In front of the Grand Stand, Mineola, L. I.—(100 Miles an Hour).

Act 3.—Scene 1. Boat Loft at the Brooklyn Navy Yard, Converted into a Reception Hall. Scene 2. Another Part of the Brooklyn Navy Yard. Scene 3. Launching a Battleship.

Oldfield Gets the Medal.

Barney Oldfield has been presented with the gold medal emblematic of the National Circuit championship of the American Automobile Association, which petered out to as near nothing as possible before the season's end. He scored 26 points. The others who figured in the running and their scores are as follows: Louis Chevrolet, F. I. A. T., 13 points; Webb Jay, White, 10; Charles Burman, Peerless, 6; Dan Wurgis, Reo, 6; Guy Vaughn, Decauville, 4; Emanuel Cedrino, F. I. A. T., 4; Earl Kiser, Winton, 2; Herbert Lytle, Pope-Toledo, 2, and Montague Roberts, Thomas, 2.

"Bell's Palsy" a Winter Affliction.

"Bell's palsy" is the latest affliction to visit itself upon the motorist, and a physician is authority for the statement that it is the result of driving an automobile in winter weather when one side of the face is exposed to the cold more than the other. The most recent sufferer is said to be suffering from paralysis of the entire left side of his face and is not alone in his misery, for he is claimed to be the third victim. It apparently travels in threes, for the doctors state that three weeks are required in which to gain relief.

Milwaukee Pays a Motorist's Bill.

Because workmen carelessly left a manhole unlighted the city of Milwaukee, Wis., will be forced to pay for the automobile of Dr. A.C. Sidler, which was completely demolished in a collision with the standpipe. The blame has been sifted through the various heads of the departments until it finally has been placed upon the men who last worked on the manhole. Therefore the city will pay the cost rather than fight the case.

Coplay Exacts its "Blood Money."

Taking advantage of the present discussion anent Pennsylvania's new automobile law, the borough council of Coplay has enacted a law to mulct motorists while it may by providing for an annual tax of $3, limiting the speed to eight miles an hour and stipulating the usual regulations regarding lights, brakes and horns. Violations are punishable by a fine not exceeding $100 or imprisonment of not more than thirty days.

MOTOR CARS AS BAGGAGE

Result is a Railroad Car of New Design—May be Used for Horses, also.

It has been a problem of growing importance for the railroads how the elaborate equipment annually carried to the summer home is to be transported, particularly when the distance is represented by the stretch from Chicago to Bar Harbor or something similar. The matter has been brought to a climax by the appearance of the automobile as one of the most important of these household chattels for which special provision must be made and some of the Down East lines are already planning ahead for next summer's demand. This is true of the Boston and Maine Railroad, which has already ordered a combination automobile, carriage and horse baggage car that will form part of the regular express trains, so that together with his trunks and band boxes, the summer visitor may have his stud of both cars and horses dumped on the platform when he alights at his destination.

On the outside the car will look like an ordinary baggage coach having a "monitor" roof with ventilating windows on each side above the curved part. At the ends of the car will be large double doors opening out from the middle, seven and a half feet wide and eight feet one inch high. On each side of the car also will be doors, two of them, one eight feet and the other four feet wide. Inside will be sliding stalls for the accommodation of sixteen horses; and gates to shut the horses in are also provided. When there are only a few horses, or when carriages or automobiles are to be shipped instead, the unused partitions for the stalls will be slipped back against the sides, giving a clear passage through as large a part of the car as desired.

There will be, of course, a man to travel with the horses and feed and water them or to look after the carriages and automobiles. The private coachman or chauffeur will be allowed to watch his charges closely.

Reduced Rates to Florida.

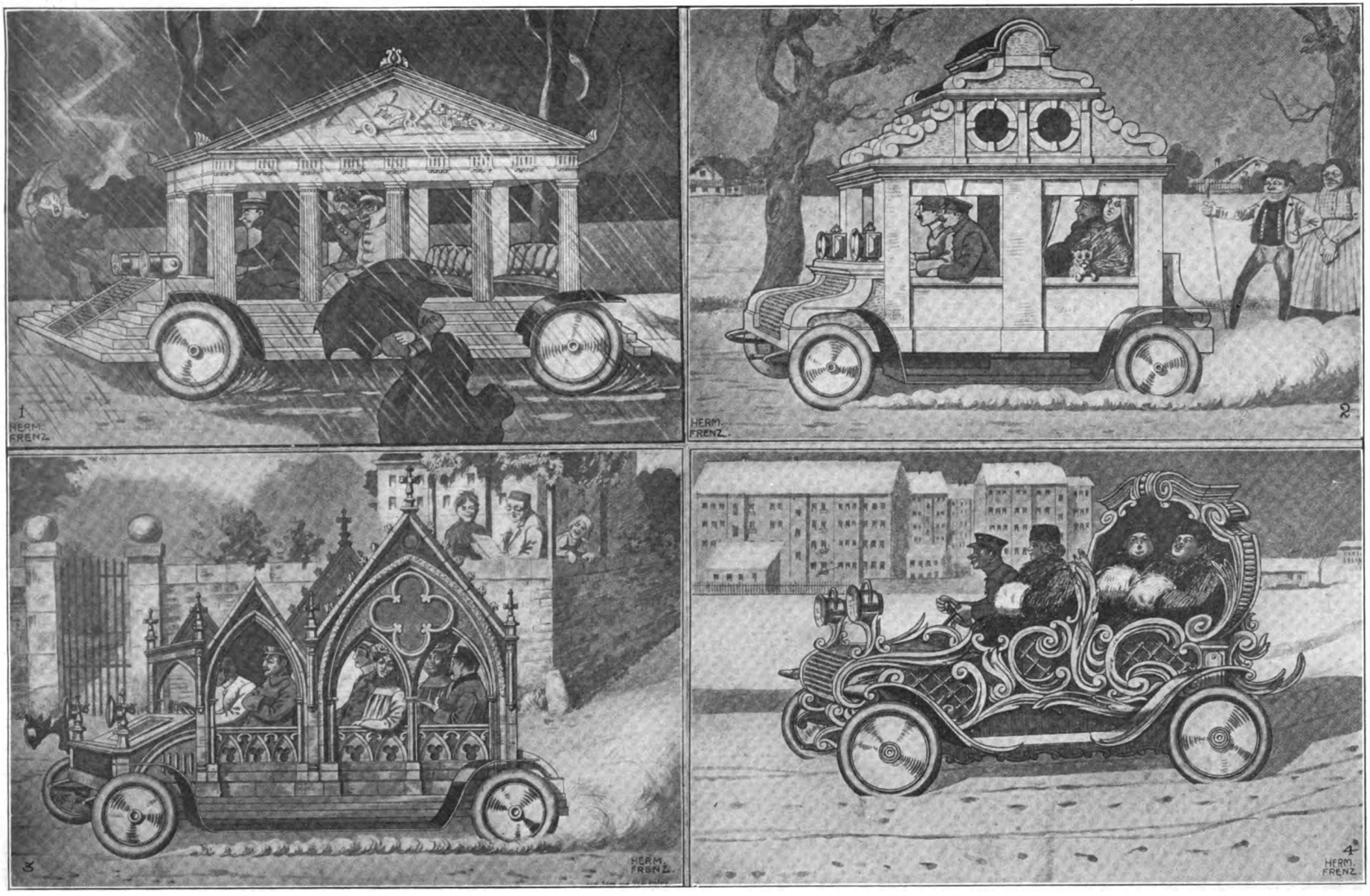
Reduced freight rates on automobiles to Florida will prevail from now until spring. The Florida East Coast Railway is to grant a half rate of $1.93 per 100 from New York or Boston to Ormond, Daytona, or any other point on the line of that railroad. This rate will hold throughout the winter and is not limited to the twenty days embracing the tournament season.

Hemery Cracks Kilometre Record.

Cables from Paris report that on December 30, Hemery, driving an eight cylinder, 200-horsepower Darracq machine, from a flying start, covered a kilometre in 20 3-5 seconds; equivalent to doing a mile in slightly over 33 seconds. This beats the previous record by four-fifths of a second. The dispatch does not state where the trial was made or whether it was officially timed or not.

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Possible Developments in Body Design.



1. GRECIAN.
2. GOTHIC.
3. RENAISSANCE.
4. ROKOKO.

Das Schnauferl.

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WILL TEST MORE THAN TIRES

British Promoters "Take on" Lamps and Speed meters—How these will be Judged.

In conjunction with England's tire trials, which are to be held in the early part of next month, it has been decided to "ring in" a few side lines, such as trials for speedometers and lamps.

It will be recalled that, as published in the Motor World when the conditions of these trials were first made public, the entrance fees are very stiff—$500 per set of tires being the minimum in case not more than ten sets were entered, and $250, should thirty or more be entered. This has considerable bearing upon the additional trials proposed, for according to the conditions of the latter, it will be the pleasure of all entrants of the minor accessories to help defray the expenses of the tire trials. In explanation, it is naively stated that as "Those who enter tires in the competition will have to provide cars and drivers," and pay roundly for the privilege, which is not stated, "some reimbursement will be made from the fees received from the accessories." An entrance fee of $125 will be charged in the case of speedometers, $75 of which will be placed to the credit of a common fund to be distributed among the tire entrants as a contribution toward the cost of running the cars. The entry fee for lamps is somewhat less, and of the latter 25 per cent. will be devoted to the same end. Entries for both close January 31.

The conditions of the trials for the accessories are as follows:

The speedometers entered for trial (which shall be chosen from stock by the club) will have to be provided and fitted by the entrant. The instruments will be required to run during the whole of the tire trials, or such shorter distance as the club may determine, and no adjustments will be permitted except in the depot either before or after a day's run. All instruments entered for trial will have to be fitted with a mileage recorder. The entry fee, which must accompany the application, has to be made on the official form of the club, and will be $125 per instrument.

The speedometers entered for trial will be observed on the road, and they will be calibrated both before and after the trials. The following points, inter alia, will be taken into consideration in making the awards, viz.: Accuracy, durability, the effect of reversing the car on the subsequent accuracy of the instrument, price, rapidity of response to variations of speed, simplicity of construction and attachment, steadiness of reading.

The instrument adjudged to be the most meritorious, provided there are at least three entries, shall receive the club's gold medal, and the second best, provided there are at least six entries, shall receive the club's silver medal. A certificate of performance will be issued to each competitor. At the end of the trials the speedometers used during the trials shall remain in the possession of the club, to be dealt with as the club may decide.

In connection with the lamps there will be sections for gas and oil lamps. In the former category it is provided that all generators shall be charged once a day by the entrants, and that the entries shall be divided into three classes, as follows: A. Generators, the points to be taken into consideration, including the cubic feet of gas generated, the dryness and steadiness of generation, ease of cleaning, smell, power of retaining charge, and cost of gas supplied. B. Lamps, without generators, the tests to be concerned with the candle power of the central beam of the lamp per cubic foot of gas consumed per hour, the distribution of light over an agle of 35 degrees in a horizontal plane, the non-tarnishing of the reflector, freedom from fracture of the exposed glass, quality of construction and of attachment, fitting, ease of cleaning, price and condition after trial.

In Class C. (for self-contained lamps) all the points enumerated will be taken into consideration.

With regard to oil lamps these will be placed in three categories, viz., head, side and tail lamps, and in making the awards regard will be paid to the candle power of the central beam of the lamp, time of burning with one filling of the reservoir, ease of filling, trimming and lighting, the attachment of the reservoir to the lamp, the device for raising and lowering the wick, non-tarnishing of reflector, quality of construction, and absence of defects during the road test. In connection with tail lights, regard will also be paid to the means afforded to the driver for ascertaining if the tail lamp is alight, and the adaptability for the purpose of illuminating the number plate without unduly projecting behind it.

Bay State Elects Officials.

At the annual meeting and election of the Bay State Automobile Association, Boston, Tuesday afternoon of this week, the reports of the several officers and committees showed the club to be in a healthy condition. Numerically it numbers 394, while financially it is strong and vigorous, having, with all bills paid, over $3,000 cash balance. These officers were elected: President, Lewis R. Speare; vice-president, Harlan W. Whipple; treasurer, Herbert L. Bowden; secretary, J. Fortescue; directors, John C. Kerrison, Charles E. Fay, E. A. Gilmore, F. A. Hinchliffe and J. A. MacAlman.

Regulating the Searchlight.

The searchlight evil has been mitigated in Philadelphia, or at least in Fairmount Park. The Park Commission decided that with the beginning of the new year automobilists may carry as many lights as they please on their cars when riding through the park, but that no movable searchlight will be permitted.

LOCAL LICENSE IS HELD UP

Pennsylvania Supreme Court Grants an Injunction—Much Mixed State of Affairs.

Philadelphians have won a point in their fight against the iniquitous double taxation system now in vogue in the City of Brotherly Love. Briefly, the situation is this: An act of Legislature declares that automobiles must carry a State license tag, but no other tag. An ordinance of the Philadelphia Councils declares that all automobiles must carry the city license tag.

Thus, motorists were placed between the devil and the deep blue sea. If they showed the city license, they smashed the statute and subjected themselves to the penalty in such case made and provided. If they failed to show it, they broke the ordinance into smithereens and became liable to the punishment which the ordinance prescribed. The law laid hold of them "coming and going" and likewise down the middle, and the only way they could avoid becoming law-breakers was to leave their cars in the garage. That this absurd and anomalous condition of things should continue was, of course, out of the question. The Automobile Club of Philadelphia and the Philadelphia Automobile Dealers' Association took it upon themselves to see if the law could play both ends against the middle. But Common Pleas Court No. 4, as told in last week's Motor World, decided that the local ordinance must be complied with.

To have the law defined beyond question, an appeal was immediately taken to the Superior Court. In the meantime Highway Commissioner Hunter said that if any automobilists carried other than the State license upon their cars they would be liable to arrest. In spite of this, Chief Lukens, of the Bureau of Boiler Inspection of Philadelphia, went ahead and ordered his local tags, 2,500 of which arrived last Friday.

"The best laid plans of mice and men gang oft awry," and so it proved in this case. Late Friday afternoon Chief Justice Mitchell, of the Supreme Court of Pennsylvania, issued an order which effectively restrained the local authorities from enforcing the ordinance until the argument is heard in the case. That means that one license tag only, that issued by the State Highway Department, will be sufficient until the case is decided by that tribunal. If the regular proceedure is followed, it will not come up until March, but Attorney Ira J. Williams, for the automobilists, has petitioned for a hearing next month. The official order of Judge Mitchell reads as follows:

"It is ordered that the appeal heretofore taken in this case shall be supersedeas, and the respondents and the City of Philadelphia are enjoined from enforcement of the ordinance of December 22, 1902, pending the appeal."

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HE OBJECTS TO "BLOWERS"

Also to Armored Tires—Says they Destroy Roads, Hence Pile on Taxation.

Schemes to regulate mechanically propelled vehicles are like the poor—they are omnipresent. Bills asinine and bills more so, some even attaining the superlative degree of irrationality, have come and, like Caesar's ghost, have as unceremoniously disappeared, but each legislative season is, and seems destined to be until the end of time, productive of a prolific crop of motor regulative measures raised by cornfed sophisticated legislators.

The latest scheme is to tax automobiles on the basis of damage they occasion to the public highways. This is the feeble excuse for another chance to get a whack at automobilists, and, as yet, has only reached the suggestive stage, but as that anglicized Irish revolutionist, George Bernard Shaw, expresses it, "You never can tell just what'll happen." The suggestion to tax automobiles on this basis is made by State Road Commissioner E. C. Hutchinson, of New Jersey, in his annual report which has just been submitted to Governor Stokes. The commissioner only makes the suggestion, but hopes some member of the Legislature will take it up. The commissioner believes that if high speed machines are to be allowed the use of the highways, and, he naively acknowledges, there is no imminent indication of their prohibition, they should be taxed in proportion to the maximum speed of which they are capable, which, he claims, is a fair measure of their powers of destruction.

To offset the "increasing havoc wrought by automobiles," the passage of "restrictive legislation to eliminate armored tires, chain tires and blowers" (presumably meaning mufflers) is also urged. In that part of his report bearing on the use of highways by automobiles, Commissioner Hutchinson says:

"The automobile is now a recognized means of conveyance, and as such is entitled to the use of the highways, but there are certain appliances used upon them which are very detrimental to our roads. They are the armored tire, the chain tire and the blower. The damage done to the surface of our macadam and gravel roads by these appliances is so great that the question of remedy is creating considerable agitation all over the different counties of the State. The temptation to get all the speed possible out of any means of locomotion is irresistible; therefore, no one should be allowed to run a machine upon our public highways without first obtaining a license, granted after proper examination, as the majority of accidents are caused by the incompetent chauffeurs. If the high speed machines are to be allowed on our highways, they should be taxed in proportion of the maximum speed of which they are capable. In other words, they should pay for the damage they do, and all money paid into the State treasury for such licenses should be applied to the maintenance and repair of our roads.

"The dust raised by an automobile, when running at the rate of less than twenty miles an hour, is not any worse than that raised by many wagons, but when this limit is exceeded, the automobile becomes the dust nuisance. Many cures for the dust annoyance have been suggested, as the sprinkling of roads with crude oil and different solutions of absorbent salts. These will prevent the dust, but are too expensive to be generally used. Our remedy, therefore, would be the strict enforcement of the speed limit, the abolition of armored tires, chain tires and blowers, and a sprinkling of all improved roads early in the morning and in the evening. This would preserve the roads and would reduce the cost of repairs very materially, at the same time giving us a better, smoother and more dustless surface than we now enjoy. There is no better or cheaper way of preserving our roads than by sprinkling. Water for that purpose can be obtained at neighboring streams, and in those sections where there are none, from wells driven beside the road. In either case it is better and cheaper to pump the water into a tank, from which it can be drawn into the wagons, thereby saving much time."

As to the damage wrought by narrow gauge tires, Mr. Hutchinson says: "There is one other cause of unnecessary wear and damage to our roads that should be removed. It is the narrow tire on heavily loaded wagons. The present law provides that townships may allow a rebate of taxes to all owners of wagons or carts, used for the transportation of merchandise, having tires of not less than four inches in width. We would suggest that this law be amended so as to include every municipality in the State. The premium of $1 per year for each wheel would be money well and profitably expended, as the resultant saving of our road covering would be many times this amount, to say nothing of the added comfort to all. Massachusetts and Connecticut have gone still further and impose a penalty not exceeding $100, on all wagons having tires of less than a prescribed width for a given size of axle. As they are, next to New Jersey, the leading good roads States, we think that their example might be profitably followed by us.

"The enforcement of the requirement of the new road law, passed last winter, that the counties should keep the roads, built under State aid, in good repair, or have the moneys due them withheld until the State Commissioner of Public Roads should certify that they have been placed in good repair, has had a marked effect upon the condition of our roads. Their surface is smooth, their sides are free from weeds and grass, the gutters and ditches are clean, and unsightly and injurious pipes and culverts have been removed. The change is so marked in some sections that the roads are hardly recognizable, but if our vigilance relaxes, we fear that the local authorities will become careless. The result would be that New Jersey would lose the reputation which it now has for being the home of good roads. Other States claim pre-eminence in agricultural products or manufactures, but New Jersey's position as the first good roads State in the Union is as yet unchallenged. As we have so long excelled, we are naturally anxious to hold the high position we have gained."

The report shows that during the year 1905, 67.78 miles of roads were paid for under the State aid act. The total cost to the State was $164,648.99. The regular appropriation for the year was $270,000, and there was an additional appropriation of $15,000 in the supplementary bill. The balance available for roads under construction is $120,583.54. Since the passage of the State aid law in 1892, 1,111.31 miles of road have been built in the State under the act, the total cost of which to the State was $1,925,441.14.

The result of the year's work, in brief, is 67.78 miles of road finished and 38.46 miles in process of construction, a total of 106.24 miles. The commissioner says that when the above roads are paid for the appropriation will be so nearly consumed that road work for the year 1906 will have to cease, unless the Legislature sees fit to grant an appropriation of at least $130,000 in the supplemental bill.

To Make "Borrowing" a Misdemeanor.

Without waiting for promised legislation, F. G. Robinson, manager of the Automobile Storage & Trading Co., of Albany, N. Y., has taken the initiative towards the introduction of a bill in the present session of the Legislature, making it a misdemeanor for garage employes or chauffeurs to take cars from garages without permission. Mr. Robinson's bill, which he has drafted and will have introduced, is far-reaching and is designed also to protect owners who leave their cars in the street. It is one of the inexplicable vagaries of the law that a chauffeur cannot be convicted for taking a car and returning it, unless there is intent to steal. Mr. Robinson asks every owner in the State to write his Assemblyman or Senator to vote for his measure.

The Ghost is Here, too.

It took a long time to materialize, but the automobile ghost is now here. It appeared almost simultaneously in localities widely separated. A Pittsburg, Pa., cemetery claims its motor "hant," and all Surrey, in far off England, is said to be perturbed over the appearance of a "phantom white motor car driven by a woman muffled and swathed in cloudy chiffons." Rabbits' feet are reported to be at a premium in both places.

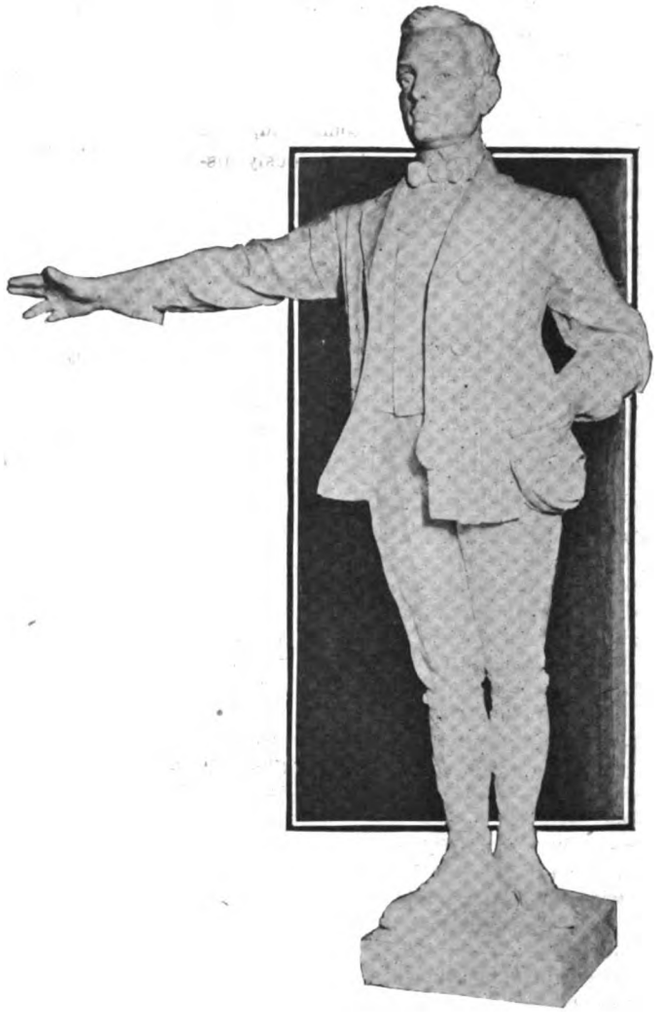
Welch Buys Ross's "Tea Kettle."

Andrew J. Welch, of Hartford, Conn., has bought the freak Ross steam car which was driven at Florida last winter, but which disappeared from view after it plunged through the fence at Brighton Beach in May, nearly killing Joe Nelson, its driver. Welch will use it for exhibition purposes at Charter Oak Park, Hartford, next summer.

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The Lady and the "Tiger."





The Association of Licensed Automobile Manufacturers is going to reveal to the public the typical "Automobile Girl," also the typical chauffeur, at the Madison Square Garden show. They are after-thoughts, but will be in harmony with the prevailing design. The lady and the "tiger" have been created of white staff, more than life size, and will be useful as well as ornamental. The figures are to be placed on pedestals, the outstretched arms denoting the route to the concert hall. The "girl," who already is being used on the show posters, has been evolved of a shell and will support the monogram of the association. From the top will extend streamers of electric lights, giving the effect of strings of pearls. Both she and the chauffeur are deemed works of art. They are depicted by the accompanying illustrations.

Evolving the Motor Fire Escape.

An automobile fire escape is the latest addition to the ranks of the thousand and one uses to which the motor vehicle is being put. The apparatus is but an enlarged edition of the jack in the box idea—the lazy tongs, on a scale commensurate with the height of modern buildings. The frame work of the lazy tongs is constructed in such a manner that the external places of junction of every second pair of legs are adjusted to serve as supports for platforms which can be put up to correspond with the various heights of the floors of a burning building. A gangway is hinged to each platform, from which descent may be had with the aid of a rope ladder.

Of course, these are all details that have little bearing on the question of the motor vehicle transport which is to convey the apparatus to the scene of operations, but that is a matter of secondary importance, and to tell the truth, the inventor has not had time to consider it, nor for that matter, the actual working of his fire escape, for it has not got beyond the paper stage as yet.

What "Batch" Can Do Blindfolded!

Speaking of the genial secretary of the A. A. A., one of his admirers, a country daily, says: "Mr. Batchelder is an expert motorist, and it is said that blindfolded he can take an automobile entirely apart and put it together again." What Batchelder said when he read this admiring comment is not a matter of record.

When Careful Driving is Necessary.

A timely warning has prevented many an accident, but there are signs of danger apparent to the careful and observant driver which are not to be gleaned from guide boards. And one that it is particularly advisable to bear in mind at this time of the year is the fact that a fresh fall of snow is apt to smooth over some bad ruts, as well as other depressions in the road. They may be anywhere from an inch or two to half a foot in depth and with the earth frozen solid, form a trap for the wheel that may tear off the tire if it does no greater damage in the shape of overturning the car, as has been known to occur. Slow and careful driving should be the rule over all such seemingly innocent surfaces.

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GOOD ROADS MOST POPULAR

Official Canvass of Vote Proves it—Preparing Now to Build the Roads.

Not until this week was it officially announced that the $50,000,000 good roads appropriation had been passed at the last general election in New York State, along with the six other constitutional amendments which came up for decision at that time, and that, too, with practically a two-thirds majority.

Although it had been understood pretty generally that the amendment had been passed, the exact figures were in considerable doubt, and the full significance of the victory for the good roads movement could not be appreciated. The results, which were duly certified to on Thursday by the State Board of Canvassers, at Albany, show that this sixth clause, which is technically known as an amendment to Article 7 of the Constitution, received nearly six thousand more votes than did either of the other measures, and that it passed by a majority of 383,188 for, as against 117,181 in opposition to it.

As will be remembered, this result completes the ratification of an amendment which was first passed by the legislature of 1903, was again sanctioned by the legislature of 1905, and has now become fully established by the final decision of the people. As it stands, it permits the executive body of the State to bond itself annually in the sum of $5,000,000 for ten years, the entire amount to be outlaid in the construction of State highways according to a most ingenius system of division of the cost between the corporations of the towns which receive the most direct benefit from the improvement, the counties in which they are situated, and the State: by which means the quality of the roads constructed will be absolutely uniform as far as is possible, and the cost to the local, and frequently impoverished communities, which are most in need of the improvement, will be merely nominal.

The work of constructing the highways is already well under way, in accordance with the provisions of the Fuller-Plank law, and the Higbie-Armstrong Good Roads law, several thousand miles being already complete and as many more being in immediate contemplation. The passage of the new law will, however, forward the work considerably, and will insure the completion of 1,400 miles of road, which are included in the scheme within the period covered by the bond issue. As summed up in his recent annual report, State Engineer Van Alstyne gives the conditions which at present obtain, practically as follows:

Since the Higbie-Armstrong Good Roads law went into effect in 1898 up to December 1 last, fifty-one counties have petitioned that 6,900 miles of roads be improved. Of this amount plans for such improvements have been approved by county boards of supervisors, embracing 2,038 miles of road.

Of the 2,038 miles approved by supervisors, 704 miles have been constructed, leaving 1,334 miles, the total estimated cost of which is $12,627,398, of which the counties have appropriated one-half, or $6,313,699. The State has appropriated nothing toward the other half.

From the above statement it appears that the coming legislature should appropriate $6,313,699 to provide the State's share of those roads that have already been approved by the various boards of supervisors, who have made an equal amount of money available. It is probable that before the legislature adjourns at least $1,000,000 more will be appropriated by the counties, making it necessary for the legislature to provide about $7,000,000 during the session of 1906 to equal the amount appropriated by the counties. It is very desirable, says the State Engineer, that this or some other amount of money be made available as early as February, 1906, so that the roads may be advertised and the contractors can make arrangements to secure the necessary plant, machinery, tools, labor, etc., for starting their work at the earliest possible date.

The State Engineer recommends that the roads improved under the Higbie-Armstrong Good Roads law be maintained by the State from funds obtained by the taxes now paid by the abutting property owners and from a tax to be paid by owners of automobiles for licenses, supplemented by such State money as might be necessary to keep the roads in a proper state of repair. The last amount should not be much greater than is now paid out by the State under the Fuller-Plank law toward maintaining the State built roads in the money system towns. To carry out the provisions of the Fuller-Plank law next year the State will have to appropriate $500,000.

It is probable that in the near future the State will have to provide a new prison. The State Engineer recommends that the site of this prison be located where the able-bodied male prisoners may be usefully employed in operating a plant for crushing stone to be used in the building and repairing of State, county and town roads and such other improvements as may require the use of broken stone. During the construction of the barge canal there will be millions of cubic yards of rock excavated at different places along the line of the canal and placed in spoil banks, where, under the terms of the contract, the excavated rock remains the property of the State.

The State Engineer suggests that the site of the prison be located on the west bank of the Hudson River, where trap rock can be used without injury to the scenery of the Palisades, or adjacent to one of the spoil banks, where the stone necessarily excavated for the barge canal may be crushed for use on the public roads and works of the State.

He also recommends that the Higbie-Armstrong Good Roads law be amended to permit the planting of shade trees on roads that are macadamized. These trees will eventually keep the shaded macadam roads from drying and ravelling out and thus decrease the cost of maintenance.

How Wide Tires Help Highways.

Troy, N. Y., has as a member of its Board of Supervisors a man who has the courage of his convictions. He has, accordingly, drawn up an ordinance providing for the use of wide tires on all wagons carrying heavy loads through the streets of that city on and after March 1, 1907. This has been pending before the ancient city's lawmakers for some time, but, blinded to the ultimate interest of the people they represent by a lack of foresight that does not permit them to look beyond the immediate present, most of the gentlemen in question have refrained from coming to the support of the ordinance.

One bright supervisor from a country town admitted that he was convinced that wide tires were necessary to preserve the country roads, and were an actual advantage to the farmer, still he disliked to vote for a measure that imposed an involuntary tax upon his neighbor. The much greater burden of taxation imposed upon the same farmer by the failure to use wide tires evidently never struck him. It is almost superfluous to state that wide tires are road makers and narrow tires road breakers, nor does it require any special scientific attainments or knowledge to appreciate the amount of damage a heavily loaded wagon with ordinary sharp, narrow and rounded tires can do on the best of roads. But beside the immense saving in road maintenance brought about by the use of tires proportioned to the load to be carried, there is the further great advantage of increased hauling capacity with the same or less power. Numerous tests with the dynamometer by national and State experiment stations have proved that ordinary teams can haul 40 per cent. more weight with three-inch tires than with two-inch. A test in Missouri showed that 3,248 pounds could be hauled as easily on three-inch as 2,000 pounds on two-inch tires.

Mention has been made times innumerable of the system by which such Continental countries of Europe as France and Germany have maintained their vast network of floor-like roads in a condition that is equalled in no other part of the world, but it is a story that will bear endless repeating, at least, until it is taken to heart. Germany requires even light vehicles to have tires of a minimum width of 2½ inches, and both this and other European governments compel all road users to construct their vehicles in a manner that will impose the least possible wear on the road surface. In France every market wagon and car is a roadmaker; the tires are from 3 to 10 inches wide, the average being from four to six inches, and the rear axle is more than a foot longer than the fore, so that the track of the rear wheels is fully one inch outside of that of the forward pair.

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RULES FOR TOURIST TRIALS

Revised Regulations that Will Apply and that Will Discourage the "Freaks.

Conditions under which the contest for the Tourist Trophy is to be run off this year have just been made public by the Automobile Club of Great Britain, and while the distinngnuishing characteristic of this event—a limited fuel allowance—has been retained, a number of changes have been made that are of interest. The date is to fall between May 31 and October 1 in each year, definite notice being given not later than February 1. Although not definitely announced, it appears to be considered settled that this year's event will be run in May. Despite the great amount of comment raised last year over confining steamers to the same allowance as gasolene cars, it will be noticed that this has not been altered, and any steam cars entered will be restricted to one gallon of fuel for each 25 miles run. As 10 to 12 miles represents the maximum of which the steamer is capable under favorable conditions, this is a prohibitive restriction.

"The competition shall take the form of a race for touring cars, irrespective of the country of their origin, with a limited amount of fuel, under the following conditions," in brief sums up the raison d'etre of the event.

The following is a résumé of the more important conditions governing it:

The race shall be held under the competition rules for the time being of the club. Cars may be entered by members of the club or of any recognized foreign or colonial automobile club.

Special awards may, at the discretion of the club, be given to those cars competing in the race which are entirely of British manufacture, such cars to comply with the Bennett Cup rules so far as the country of origin is concerned. The distance of the race, including controls, shall be not less than 150 and not more than 300 miles. The car completing the course in the shortest time shall be the winner, subject to compliance with these regulations, and the entrant of the car shall, on signing the bond and effecting the insurance required by the club, become holder of the trophy.

The fuel to be used shall be provided by the club, and shall be petroleum spirit having a specific gravity of 0.695 to 0.705 at 60 degrees Fahrenheit. For 1906 the allowance for both gasolene and steam cars shall be one gallon for every twenty-five miles, if the course be in the Isle of Man, and shall be an equivalent amount if the course be elsewhere.

The weight of the chassis shall be not less than 1,275 pounds. Accumulators and other ignition apparatus, the tires on the wheels, the bonnet, tanks (empty), and dashboard, shall be treated as part of the chassis. The load carried by the chassis, exclusive of fuel, oil and water, spare tires, spare parts, luggage, and provisions, shall be not less than 1,125 pounds, made up of: The body and accessories, such as mud guards, and the driver and one passenger, with ballast not to exceed 300 pounds.

The chassis shall be in all respects of the ordinary touring type, and the car shall conform in all respects to the requirements of the British law. The chassis shall have not less than four road wheels. The tread shall not be less than 4 feet, and the wheel base shall not be less than 8 feet. All tanks shall be fixed in the ordinary standard position.

Efficient silencers must be fitted to all cars, and no form of auxiliary exhaust release will be permitted. The number of gears in the gear box shall be restricted to not more than four speeds forward and reverse, except in the case of a variable speed gear. Every competing car shall be required to show that it is capable of being driven half a mile at twelve miles an hour on the level on the top forward gear and without the manipulation of the clutch. Every competing car shall be required to show that it is capable of ascending a hill of 1 in 6 on the high gear without a flying start.

The body shall be in all respects of the ordinary touring type, substantially constructed, properly upholstered and furnished, comfortably seated for driver and three passengers facing forwards, two in front side by side, and two behind side by side.

The body of the car shall be easily removable, and this removal shall not entail disconnecting any part of the ignition apparatus, lubricator connections, fuel pipe work, the fixings of any tank, or any pipe connections to the tank.

Between the start and finish of the race the driver and his mechanic only shall be permitted in any way to assist a car, and no stores, supplies (except water), spare parts or spare tires, other than those actually on the car at the start, shall be taken on the car during the race. Everything (except fuel) which is on the car at the start must be carried throughout the race.

Not more than two cars by one manufacturer will be accepted.

The entrance fee for 1906 has been fixed at $100 per car.

Every car entered for the 1906 race shall be provided with fuel tanks of a capacity and description to be specified, which shall be made, fixed and connected in accordance with the specification to be issued by the club not less than three months before the race.

Any loose ballast required by these regulations shall consist of canvas bags of sand containing not more than 50 pounds each, and shall be provided by the competitor.

If after the race the weight of chassis and weight of load carried, respectively, are found not to conform to the regulations, the car shall be disqualified. The club reserves the right to cut open any of the fuel tanks and to take such other steps as it may deem necessary to examine the fuel system of any car on the conclusion of the race. In any case the fuel tanks of the first three cars will be cut open on the conclusion of the race.

FIVE TIED FOR TROPHY

Remarkable Result of Australian Reliability Test—"Run-off" Failed to Break Tie.

One of the most uncommon events ever held was the Dunlop Motor Reliability contest, November 14 to 18, from Melbourne to Sydney, Australia. It was uncommon in that seven of the contestants went through with perfect scores, necessitating, under the rules, a run off. In this only two cars dropped out, and as five cars again scored the maximum points, it was decided to call the contest at an end and inscribe the names of the five on the trophy. If one of these contestants wins the contest next year, the trophy will become his property.

Four classes were provied for in the contest: Motor bicycles, single cylinder cars, cars up to 12 horsepower and cars of more than 12 horsepower. The distance from Melbourne to Sydney is 572 miles, but the journey was divided by days, Euroa being the destination on Tuesday, Albury on Wednesday, Gundagai on Thursay, Goulburn on Friday and Sydney on Saturday. In all thirty-one machines started, three of which were of American manufacture, Oldsmobiles. Until Goullroid the contest was easy, although bad roads were encountered for the greater part of the journey. From Goulurn to Sydney, 129 miles, the last stage of the contest was in the nature of a non-stop run, and as hills of more than ordinary grades were encountered, the trial was rigorous. However, seven contestants scored the maximum number of points as follows: S. H. Day, 8 horsepower De Dion; W. B. Wilkinson, 8-10 horsepower Talbot; George Hobbs, 18-28 horsepower Mercedes; W. A. Grimwade, 10 horsepower Argyle; H. Tarrant, 8-10 horsepower Tarrant; A. Fauvel, 12 horsepower Richard-Brazier, and J. W. Moffatt, 10 horsepower De Dion.

As these were all tied for first honors, a non-stop test was then run over a distance of 132 miles, from Sydney up to Medlow Bath, on the Blue Mountain, and return. No finality was reached, however, as Fauvel was the only contestant to drop out, his defeat being caused by a broken spring.

As these contestants were on even terms, it was decided to hold the run-off on the return trip to Melbourne, under non-stop conditions, three points being deducted for every minute or part thereof spent in repairs during the return trip, any contestant losing 10 points to drop out of the contest. The start was made Thursday, November 23, and the destination was Goulburn, 129 miles. At Goulburn Hobbs, Moffatt, Day and Wilkinson had perfect scores, and Tarrant and Grimwade were charged with 3 points each, the former having lost one minute replacing the cooling fan belt, and the latter having accidentally stopped his motor while getting out of the car. Friday's run was from Goulburn to Gundagai, 121

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miles. It was marked by an accident to Moffatt, in the De Dion, which puts him out of the running for good and all. He ran into a culvert and the car capsized, smashing the front wheel. Hobbs again ran with a clean score; Day was given 2 points for changing a sparking plug, and Wilkinson scored 3 on account of accidentally stopping his engine while filling the gasolene tanks.

Saturday's journey was from Gundaiga to Albury, 121 miles, and not one of the contestants was penalized. The last and final run was to Melbourne, the most severe of the series, 136 miles of the 201 being classed as bad. All the cars finished within the time limit, although Grimwade scored 3 points for accidentally stopping his engine at Euroa, and Wilkinson was given 3 through for the same reason. The total points debited for the return trip were: Hobbs, 0; Day, 2; Tarrant, 3; Grimwade, 6; Wilkinson, 9. As none had been debited with the 10 points which were necessary to count out, all five were declared winners and their names ordered engraved on the trophy.

Priests Apply for Papal Permission.

Having duly received the official sanction of the head of the church, it would appear that the automobile is due to become an official institution of Catholicism, for in view of the Pope's example, several of the younger cardinals are anxious to do likewise, and have accordingly asked Pontifical permission to employ the motor car for their diocesan visits. "So much time is lost by delay on the railroads," constitutes the burden of their lay by which these prelates of the Church hope to open the way to the enjoyment of a privilege which they have long envied, but hesitated to adopt for lack of precedent. The latter takes the form of a permit to Cardinal Satolli.

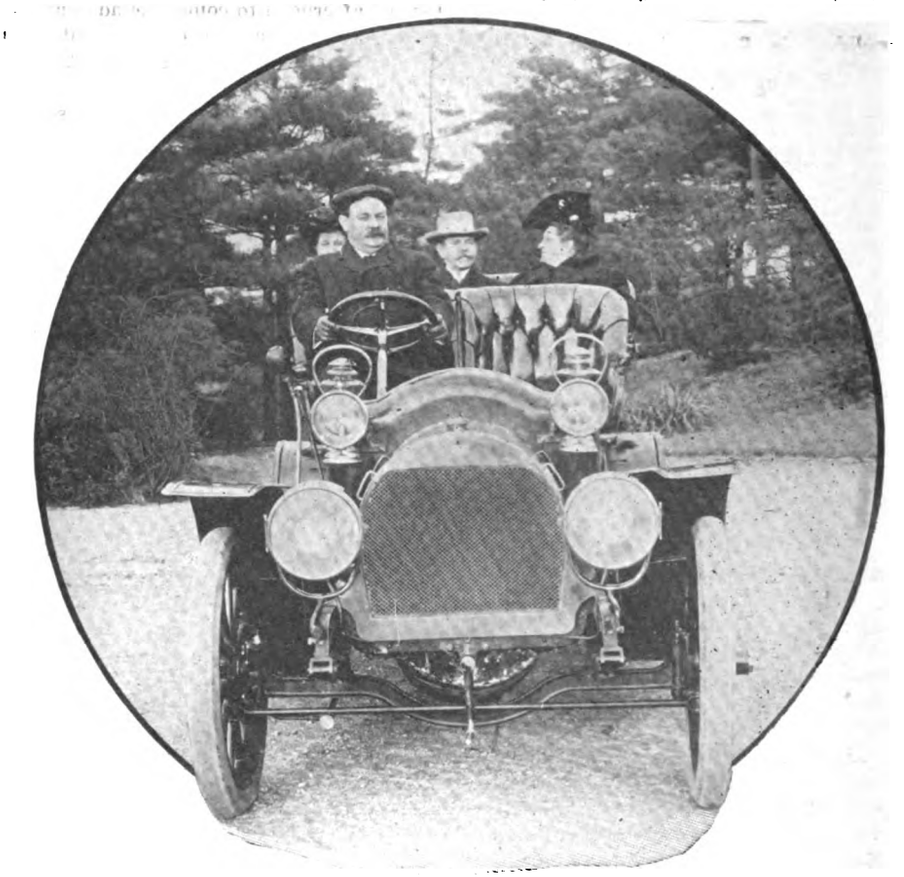
Linking the Past and the Present.

"A living anachronism" is the most apt description that can be accorded an electric vehicle built in France for a Paris perfumery house and exhibited at the recent Salon, for, with its ornate body in the style of Louis XV, resting on pneumatic tires and guided by a wheel rising behind the regulation bonnet, it combines the sixteenth and the twentieth centuries. With its bright colors and artistic panels, it is said to have formed a most striking exhibit, and is but another illustration of the fact that there is no phase of the carriage maker's art that is not readily applicable to the motor car.

Germany to Pile on Taxation.

That portion of the automobile industry which centres its interest in Germany is greatly alarmed over the proposed motor tax. This, according to a calculation based on the probable rate of 100 to 150 marks per car, would involve an annual increase in the internal revenue of something like 3,500,000 marks, or $833,000—an amount which is not likely to be overlooked as a possibility when the national expenses are rapidly increasing and the necessary funds are much needed.

The Minstrel and the Motor Car.



LEW DOCKSTADER IN HIS 1906 RANIER.

Christie and the Cow.

Walter Christie tells the following story on himself:

"One day in August," he said, "I was down in Southern New Jersey and took a run out into the country, and somehow got lost. On toward dusk I found myself at the meeting point of four crossroads and unable to tell which road would lead me back home.

"So I pulled up and waited, and soon a boy driving a cow appeared.

"'My lad,' I said, 'I want to get to Cape May.'

"The little fellow stared at my big racing car, and then he said calmly:

"'Well, just foller this cow an' ye'll get thar.'"

Scorching as an Aid to Bankruptcy.

"Fined for furious driving on ten or twelve occasions, costing in all about $1,250 in penalties and costs," was one of the causes of his bankruptcy, attributed by a recent applicant for legal relief. The unfortunate was a London publisher.

Hill Heads the Brocktons.

The Brockton (Mass.) Automobile Club has elected the following officers for 1906: President, G. W. R. Hill; vice-president, H. R. Burbeck; secretary, Dr. Edward Bryant; treasurer, Albert Leighton.

Now Comes the Motoring Dentist.

"No one who has ever faced the ordeal of convoying a shrinking, shrieking child for a much needed visit to the dentist would fail to appreciate the dental practitioner who makes his rounds in an automobile," says a disciple of the drill and forceps, who is likewise a devotee of the motor car to an extent that leads him to believe in the efficacy of bringing the dentist to the patient where the latter prefers it, whether from taste or necessity. "I can pack my entire paraphernalia, including my big drill with its painful pointing finger, and an assistant into my car and be off at five minutes' notice," he adds.

How to be Safe in a Fog.

A paternal government not having seen fit to prescribe a code of rules and regulations for the guidance of land navigation in a fog or to adopt those already established for marine use, the irrepressible S. F. Edge has taken it upon himself to fill the gap for foggy, murky London. He says the best way to drive in a fog is to sit very low and to have a lookout man seated on the footboard, so as to take advantage of the side lights. Likewise, keep as close to the curb as possible. It might be added "go slowly," but no mention is made of this particular, possibly because Edge, who gives the advice, is not generally reckoned a "slow coach."

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STEER ROPING, NEW STYLE

Accomplished in Record Time but it Was Exciting While it Lasted.

Pursuing a steer from a standing start across a large arena, roping, throwing and tieing it in the remarkably short time of thirty-one seconds, is a record that stands alone in the history of the motor car.

This was accomplished in the full view of thousands of spectators at the last convention of the National Association of Cattlemen held in Fort Worth, Texas, not long ago. The performance was the outcome of a bet of $500 between two wealthy cattlemen of the State, one of whom was an automobile enthusiast, having unbounded confidence in the ability of the motor car.

C. J. Corkhill was attending the convention in the interest of the Oldsmobile Company, and was induced by the cattlemen to make the attempt, and tells of its accomplishment as follows:

"The first that I knew of the idea," said Mr. Corkhill, "was when E. B. Walters and A. H. Wharton talked about the relative merits of the automobile and the pony. Walters was saying that the machine could not be used on the ranch and consequently it was of no use to him. Wharton, who has owned an automobile for several years, replied: 'Now, I know better than that. You can catch and rope a steer just as well with a bubble as with a pony, and I'm willing to bet money on it.'

"'I'll just take you on that. You cannot catch a steer in an automobile to save your life,' was Walters's answer.

"The conversation went on in this wise for half an hour or more, and sums ranging from $10 to $1,000 were mentioned. Finally, however, $500 was agreed upon as a bet.

"The next thing was to pull the affair off as soon as possible, and it was decided that the feat should be tried the next day, some time during the roping contest. I knew both of them well, but of course it was up to Wharton to make the arrangements, as he was the one who had to prove that it could be done.

"I was standing near, so he turned to me at once with the remark, 'Well, Corkhill, I guess it's up to you to help me put this through. Will you take your runabout into the ring to-morrow, and make a try at a steer? Don't be afraid of the machine; smash it to smithers if you have to.'"

"First of all I looked up Bill Dillingham, one of the best ropers on the ranges. I explained what I wanted, and he readily agreed to do anything he could. Wishing to make sure of it, the next morning we took the car, which was an ordinary seven-horse power runabout, and went out to experiment a little. We cut a steer out of a bunch after a little maneuvering, and succeeded in roping him.

"Thus encouraged, we waited confidently for the afternoon to come around. The steers were penned in a corral at one side of the grounds, and let out one at a time by means of a narrow chute. The grand stands and the bleachers were packed by thousands of people from all the surrounding territory. The bet had circulated throughout the whole town, for it was different from anything that they had ever heard of, and naturally they favored the bronchos, having always been accustomed to place their faith in them.

"When about ten or a dozen had been roped in the usual way by the cowboys, one of the judges strode over to us and said, with a broad grin, 'Well, get your cow pony out, and let us see what you can do.'

"Without further ado, we drove over to a position alongside the chute, and a steer was let out. We took up the chase immediately, but were handicapped more than one on a pony, for he can attain full speed in a couple of jumps, while we had to warm up more gradually. So he had a pretty good lead when we hit our gait. It did not take us very long, however, to close up once we were started. We followed him across the enclosure, but had to come quite close, for Dillingham always works with a 28-foot rope.

"Just as the steer commenced to turn Bill gave the lariat a swift fling, landing the noose squarely over the horns. As it settled along his flank I turned the machine sharply at right angles with the course, gave the rope a twist around the steering post, and then, sudden as a streak of lightning, you might say, came the strain. The machine spun half way around, something snapped and the frame quivered and shook. But the steer was thrown hard and flat on the ground. I can still hear the thud as it struck.

"The crowd set up a cheer that I have never heard equaled. They stood on top of the chairs, waved their hats, and yelled as if mad. Without waiting to look around Bill jumped out of the car, ran over to the steer, hog-tied it, and held up his hands for time. From the instant that the steer had been let loose, until he was thrown and tied, the stop watches had been held on us, and the whole operation had consumed but thirty-one seconds, while the best time made with a pony was 1:11. A just comparison of the two cannot be made, though, for only one can work with a pony, while in the car there were two of us, one to run it and the other to do the roping.

"On carefully examining the car I found that one of the lamps had been broken off, but no further damage was sustained, although I had expected all the time to find the frame rather badly loosened up all around.

The Latest Shade—When on earth I was a motorist.

His Satanic Majesty—Then you can crawl under this furnace and see what is the matter with this grate. It seems to be clinked up.—Ex.

HORSEMEN ERECT A GARAGE

Brooklyn's "Swell" Club Now in Possession —Its Many and Varied Conveniences.

With the completion of the new fireproof garage of the Brooklyn Riding and Driving Club in connection with the other club buildings facing the Prospect Park plaza in Brooklyn, the automobile has invaded precincts where for years Dobbin has reigned supreme. It was formally opened by the club last week and is believed to represent the finest example of its kind of which Brooklyn can boast. In connection with the opening there was a small exhibition of cars furnished by dealers for the occasion. The automobile has not been Dobbin's only rival, for ten years ago when the club's large coach house was built an elaborate bicycle room was included and at times it sheltered hundreds of the silent mounts, which, however, have long since disappeared to make way for their four wheeled, power driven competitors.

Thirty-five thousand dollars have been spent on the new building and as it is the result of more than a year's study of the best examples of its kind, both at home and abroad, nothing has been left undone to provide for the comfort and convenience of car owners.

The garage has a frontage of fifty feet on Plaza street and of 110 feet on Flatbush avenue. It is a two story and basement structure. Although it is proposed in time to add a third story so as to balance the three-story clubhouse at the other end and complete the symmetry of the group of buildings.

Aside from the outside brick facing the garage is entirely of heavy concrete construction. The walls, the floors, the staircases, the roof are all of concrete. There is scarcely a sliver of wood in the entire structure. It is believed to be absolutely fireproof. But as an extra precaution each of the rooms in the building and the staircases are provided with metal doors, fitted with a device that would automatically close them in case of a fire starting among any of the machines. The action of heat would melt a soft metal strip, releasing weights that would close the door. The "gas house" is an entirely separate building in the rear, 6 by 12 by 8 feet. It has a capacity of 280 gallons of kerosene and 560 gallons of gasolene. The fuel is drawn into the garage as wanted, by a system of improved pumps.

The basement is intended for the accommodation of electric machines. Here are ten outlets from the electric switchboard, through which the current comes from the street, and ten machines can be charged at the same time. Near by is a shop for the repair of that class of machines and the adjustment of batteries. There is a hydraulic lift in the floor which renders the attaching of batteries to the machines an easy matter. The big switchboard is a spe-

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cial design of J. Ford, the superintendent of the garage. It allows for ten outlets with only two meters, and each line is independent.

The east side of the basement is to be reserved for "dead" storage; that is, cars that are not being used from day to day. In the basement, as well as on the first and second floors there are a turntable and a washstand. The latter is supplied with water from a swinging arm overhead, so that the hose does not encumber the floor. There is an incident in connection with the turntables that shows how rapidly automobiles are developing. A year ago when the plans were drawn the largest turntable in any garage in the city was ten feet in diameter. It was thought that eleven foot tables would certainly be large enough for all the purposes of the new garage. But now that the building is done it is found that a fifteen foot table is needed to accommodate some of the machines. It has proved to be a difficult task to rip out the concrete in which the tables are set, so that it may be decided to superimpose a fifteen foot top on the present table, lapping over all around.

On the way up from the basement, it may be well to describe the elevator, or lift, which is the latest type of electric manufacture and big enough to accommodate the largest private car. It has a safe capacity of 6,000 pounds. The doors on each floor part horizontally, half going up and half sliding down. These ride against the doors on the other floors, so that it is impossible to have the doors on more than one floor open at the same time. The halves of each door counterbalance, so that it is no trouble to operate them by hand.

On the main floor there are three entrances for machines from Flatbush avenue, and an emergency entrance from Plaza street, to be used in case the approach to Flatbush avenue is blocked.

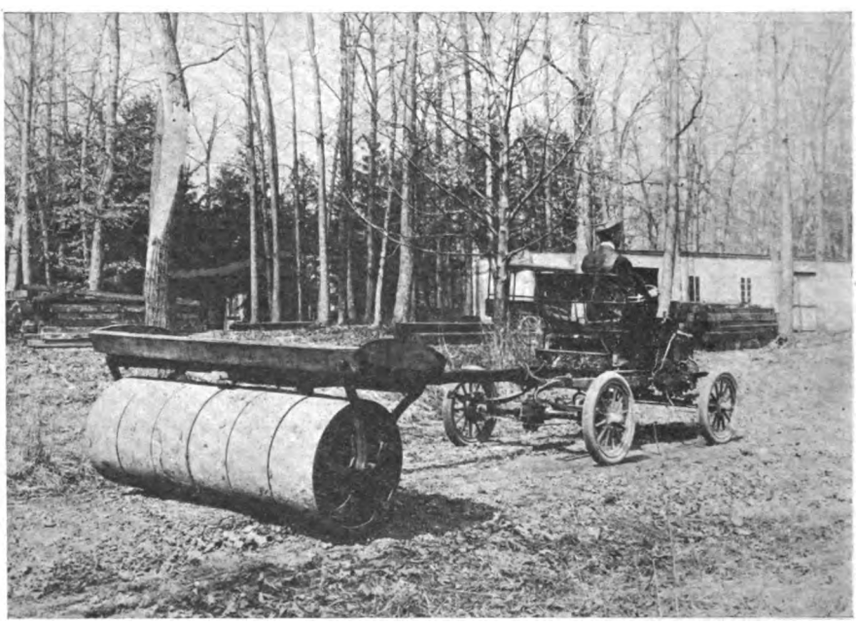
In addition to the room for cars on the second floor, there is a large, light machine shop, where expert machinists will be on duty constantly. It is fitted up with lathes, electric milling machines, shapers, grinders, a power hack saw, a 20-inch power drill, a 14-inch sensitive power drill and an electric air compressor for pumping up tires. There is an inspection pit five feet deep. In connection with the machine shop there will be a storeroom and a stockroom. Here will be kept a large supply of tires and parts for various machines, so that there may not be any delay in fixing up a serious break. One of the features of the second floor is a good sized room for chauffeurs, fitted with rugs, tables and chairs. It has a good view upon the park plaza, and will be supplied with reading matter. There are lockers for the chauffeurs, and a special telephone for them. The walls of the building are sixteen and eighteen inches in thickness. The finish inside is white. The building is heated throughout with steam from the main power plant in one of the other buildings and lighted by electricity. It has a capacity for the storage of about one hundred cars.

The Motor Car as a House Climber.



"Climbing the side of a house," is a figurative expression which is literal in this case, as the roof only constituted the sides of the house referred to. The foregoing photograph shows that even buildings are one of the obstacles it is easy to surmount in Sweden. It depicts F. Karlstrom going over the apex of a brick structure at Landskrona to win a wager. It is of particular interest to Americans, as the car employed was an American creation—an Orient buckboard—the feat giving a good idea of the power added by the new friction drive adopted by the Waltham Mfg. Co.

The Motor Car as a Road Roller.



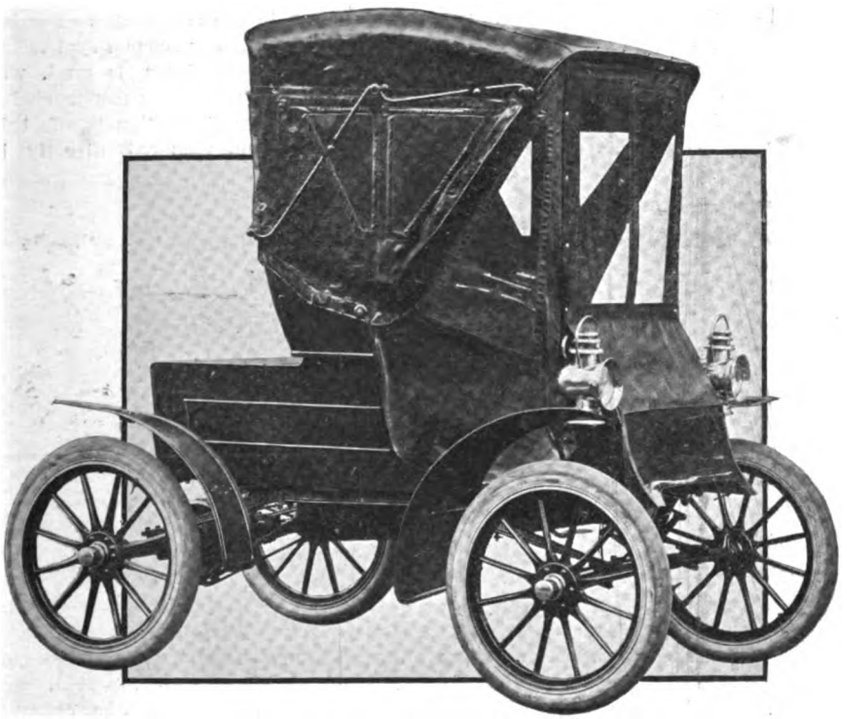
"When horses fail, the automobile is usually impressed into service," observed a disciple of economic labor the other day. Such seemed to be the case at Tarrytown, N. Y., recently when, through failure to obtain horses to pull the heavy rollers over a new piece of road, it was in danger of not being completed for weeks and perhaps ruined by rains. The Maxwell-Briscoe Motor Co., which has its home in Tarrytown, filled the deficiency to a nicety, however. The heavy roller was hitched to an 8 horsepower runabout, and the little car started up the road with its load as though such was an everyday occurrence in its career. Tarrytown people were dubious as to the result, but when, two days later, they woke up and saw the rough surface rolled as smooth as asphalt, they opened their eyes wider. The horses would have taken three times as long to do the work, to say nothing of the increase in the cost.

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ABOUT THE NORTHERNS

Old Models Improved and New Ones Embody Striking Departures—Air Clutch Included.

One of the distinctly sensational innovations of the show period will be the new four cylinder Northern car, upon which the Northern Manufacturing Company, of Detroit, Mich., will install a complete air control, as recently stated in the Motor World. For this, the Northern people claim distinction as being the first machine to be equipped with an air clutch and air brakes. In addition to this, the line will be complete in that it will comprise no less than four other types of machine, based on two different types of chassis, both of which though known to the market already are much improved in detail construction.



NORTHERN RUNABOUT WITH NEW "DOCTOR'S TOP."

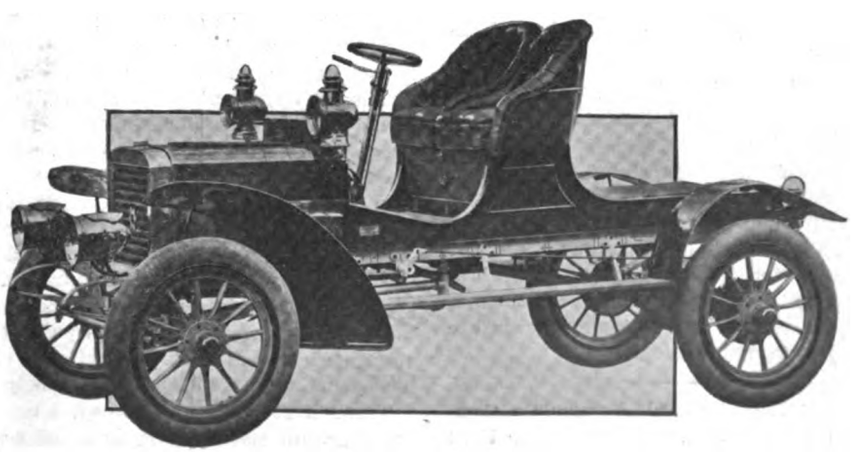
The headliner, will be a 2,250-pound machine, of generally standard construction as far as many of its features are concerned, will stand on 112 inch wheel base, and be rated at 30-horsepower. The cylinder dimensions will be 4½ by 5 inches, and the cylinders will be cast separately with the jackets and heads integral. Both sets of valves will be mechanically operated and placed directly in the cylinder heads where they will make for the greatest possible power. The features of radiation, carburation, and ignition, will be perfectly normal and according to the tenets of common practice, the latter function being accomplished by the jump spark method, storage batteries supplying the necessary energy.

The transmission is to be of the cardan shaft type, the change speed gear being mounted on the rear axle according to a most successful precedent, three forward speeds and a reverse being secured by the combinations. For changing the speeds, a small wheel is placed above the steering wheel, which handles all forward motion in conjunction with the clutch, while the reverse is obtained by means of a foot pedal. The engagement of the clutch which is entirely controlled by compressed air, is one of the most attractive points about the machine, and one which is likely to cause it considerable notoriety. The operation of one of the brakes by compressed air, also is a novel feature and one which taken together with the air clutch will make the machine of exceedingly smooth and simple manipulation.

The hand brakes which are of the contracting band type, and are actuated by an interlocking lever, are lined with camel's hair belting, and act upon pressed steel drums which are installed on the rear wheel hubs. The mounting is upon 32-inch wood artillery wheels, fitted with 4-inch tires, and the modern type of body is slung on full elliptical springs both front and rear. The compressed air for the clutch and brake mechanisms is furnished by a small pump installed on the motor, while a constant supply is held in a large tank mounted on the chassis. The hand levers for controlling the clutch, air brake, throttle and gas valves, are mounted on the steering post in close proximity to the steering wheel. The trial car, which is now in the road, has given a good account of itself over many miles of country highway, and is capable of developing full sixty miles an hour.

The two cylinder Northern touring car for 1906 will contain all the essential features of the 1905 prototype, including the fully enclosed mechanism and combined flywheel-fan arrangement. It will embody also several improvements, among which will be an increase in power which is made possible by the enlargement of the cylinders. The dimensions of the new type are 5½-inch bore by 5¼-inch stroke, and the rating will be 20 horsepower, as against 18 in the corresponding type of last year. The wheel base has been increased to 106 inches, and the springs lengthened out appropriately, so that a considerable improvement in the riding qualities of the car has resulted. The brake pedal is now fitted with a ratchet, and the brake bands are lined with camel's hair belting. The drums are now made of pressed steel, and are very strong, which fact, taken in connection with their exceptional size, the bands being three inches wide, gives a most complete control of the car at all times.

The specifications not included in the foregoing comprise, 30 by 4 inch tires, ¼ by 2 by3-inch angle steel frame; automatic compensating carburetter, of Northern design; bevel gear drive; direct connection on the high speed with a driving ratio of 3-1; low and reverse gear ratio of 9-1; foot throttle and hand lever control, and weight 2,000 pounds. The machine is mounted with an attractive type of body of special design. The Detachable Tonneau two cylinder car is a machine of practically the same type as the touring car, except for the body, which will have a removable rear seat of the Surrey type mounted without doors. In all other points, the construction of the two cars will be the same. Also, the Touring Runabout, which



NORTHERN TWO-CYLINDER RUNABOUT.

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will be another of the features of the line, will be of the same basic type, the body being distinctive, however, and the wheel base optional, the choice of 88, 100 and 106 inch length being given the purchaser.

The 7-horsepower Sturdy Northern Runabout, remains practically the same in design as it has been during the last year. The feature of the trunion body hanger upon which its reputation for easy riding has been based, will of course be retained, as an exclusive detail. The general particulars of the machine are as follows: Wheel base, 70 inches; tread, standard; tires, 28 by 3 inches; control, by foot throttle and hand spark advance. The engine dimensions are 4¾ by 6 inches, and the speed of the motor varies from 150 to 800 revolutions per minute. The speed ratio on the high gear is 3-1, and on the low and reverse, 9-1, the transmission being by single chain to a live axle, and the change speed gear being of the planetary type. Ignition is by jump spark, two sets of five dry cells furnishing the current. The carburetter is of the Northern compensating type, and the total weight is 1,000 pounds.

Reversing the Motor on New Plan.

In an effort to do away with the transmission mechanism, a Belgian inventor has adopted the somewhat doubtful and wholly novel expedient of providing for the reversal of the motor by arranging the distributing mechanism of the gas and ignition in such a way that it can be altered by the simple manipulation of a couple of levers mounted above the steering wheel and ordinarily performing the usual functions of the throttle and spark advance. These levers have a neutral point midway of their travel at which the valves are not lifted and the ignition circuit is open. Motion in one direction from this point gives a distribution suited to the forward rotation of the motor, and in the other, that suited to the reverse rotation. The alteration in the distribution is effected by the use of a duplicate set of cams, while the alteration of the point of ignition is carried out in the usual way. The starting of the motor in the reverse direction depends upon the use of the charges compressed in the cylinders at the time when it was last stopped, and evidently the success of the scheme depends entirely upon the makers' ability to produce a motor which will invariably start on compression.

Protecting the Steering Gear.

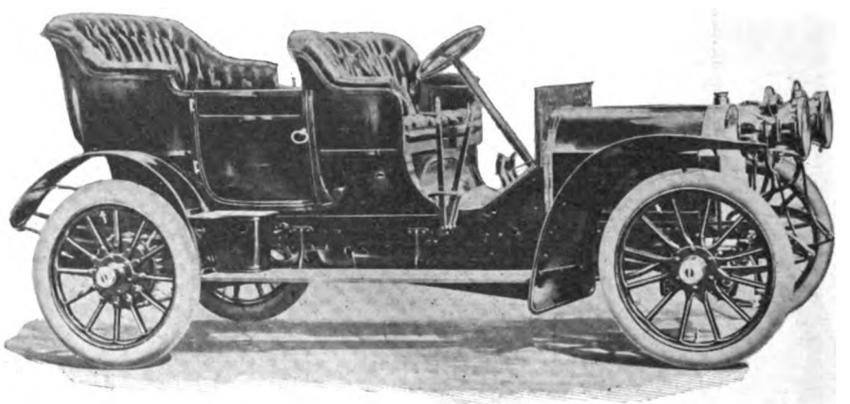
One of those little refinements which "help some," which was to be seen on several of the cars at the Paris Salon, was a flexible brass covering for the joints of the steering gear, which up to the present time have been left unprotected for the most part, or at best wrapped up in leather bags. The contrivance was simple, easy of application and seemed to fulfil all of its requirements.

For 1906 the Standard Automobile Company, of Utica, N. Y., will handle the Ford line in that city.

LOCOMOTIVE COMPANY'S CAR

Features of the French Machine Which the Big Concern Selects for Reproduction Here.

It is not difficult to imagine that the task which confronted the promoters of the American Locomotive Automobile Company, of New York, when having decided to produce a motor car, they began to cast about them for a machine all ready made which would satisfy the complex requirements of a most exact manufacturing system, and at the same time meet an existing demand in the market, was one of extraordinary difficulty. Their ultimate choice of the Berliet, as being most suitable for the purpose, is not simply extremely flattering to M. Berliet, its designer, but at once stamps the car as being of the most thoroughgoing excellence, for the decision was not arrived at until a thorough canvass had been made of all the leading makes of car, and their respective merits put to a most discriminating comparison.



24-30 H. P. BERLIET CAR.

The points in the construction of the Berliet which lead to its adoption for American manufacture under the protection of the gigantic locomotive corporation were, that it was one of the very few machines to have undergone little or no radical alteration in its make-up from the time of its first construction; that it had been the first to embody in its construction the features of make and break ignition, honeycomb radiator and mechanically operated valves; that it was essentially a simple car, and that its original maker had continued to use only such materials of construction from the first as would contribute to the successful performance of a first-class automobile. Having fixed upon the type of machine, the next step was to arrange in full detail for the construction of an American replica of the car built under American shop methods, and according to the American standards of shop production. These now having been completed, the American Berliet is presented to the American public at the beginning of the new year in types of 25 and 40 horsepower.

Throughout it is of the so-called continental type, all parts being made of selected stock, carefully machined and rigidly put together. The frame is made of imported pressed nickel steel, and is inset at the front to permit of properly swinging the steering wheels and securing a wide turning radius. The construction of the engine frame and gear case is such that the frame is sufficiently strengthened without the use of cross members, and the stability of the structure by no means lessened in the simplification. The cylinders are of twin construction and are fitted with interchangeable valves of standard type. The lubrication of the motor is by the conventional force feed system, from a lubricator mounted on the dash, and from splash in the crank case. For ignition the Simms-Bosch low tension system is used.

A honeycomb radiator is used, with induced draught from a fan constructed in the flywheel. Water circulation is effected by a centrifugal pump mounted directly behind the radiator. The control of the motor is maintained by means of a ball governor mounted on the end of the exhaust cam shaft, and actuating a throttle valve within the carburetter. The latter is of the float feed spray type, designed to automatically yield a uniform mixture under all circumstances. The manipulation of the functions of ignition and throttling is accomplished by a pair of levers mounted above the steering wheel, a foot pedal being used largely as an accelerator.

Through a metal to metal clutch taking hold of the interior of the fly-wheel, the power of the motor is transmitted to a four-speed sliding gear transmission of approved pattern. The gear changes are obtained by the selective system, and the mechanism involved is simple and positive to the last degree. A specially treated chrome nickel steel is used both in the gears and shafts, insuring for them long life and good action. Throughout the machine, wherever possible, the D. W. F. type of ball bearing is used. thus making the car at once easy running in all its component parts, and free from any possibility of derangement through poor adjustment.

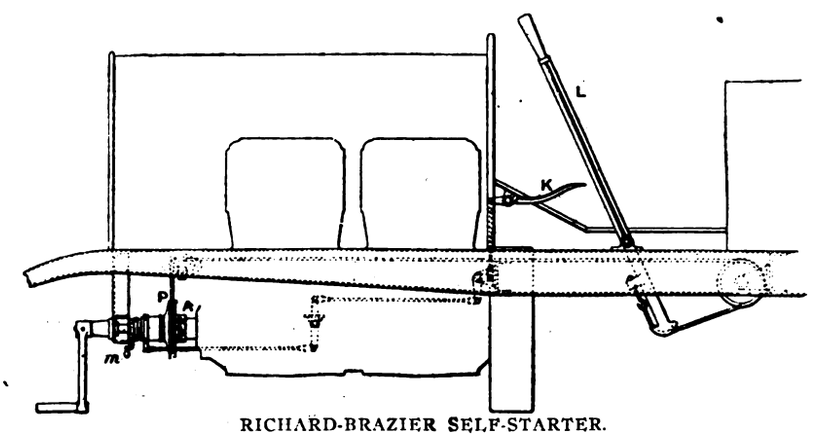
A noteworthy characteristic of the 1906 models of the leading Continental builders is the increase in the width of the brake drum, some of the cars on view having brake drums four inches wide.

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SELF-STARTING DEVICES

Details of those Employed by Two of the Big French Manufacturers.

Self-starting has finally assumed a degree of importance where it has come to be regarded as indispensable by a number of prominent makers, and it goes without saying that the coming season will see a greater variety of devices for this purpose in use than was hitherto thought possible. At least three of the foremost French builders, Renault Freres, Richard-Brasier and the Mors, have attempted the solution of the problem in a manner that involves quite an imposing array of accessories. Of the three none is more elaborate than the Renault.

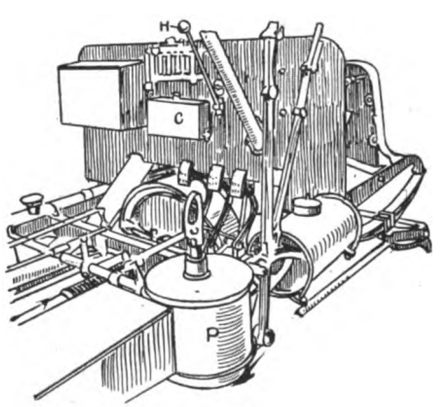


RICHARD-BRAZIER SELF-STARTER.

It consists, in brief, of a complete compressed air plant. The storage tank has a capacity of five cubic feet and is situated under the driver's seat. It is charged from the compression chamber of the rear cylinder of the motor through the usual check valve. To the rim of the flywheel is bolted a gear which meshes with the pinion of a small and very compact three cylinder motor. Normally the two are not connected, a lever on the dash simultaneously putting them into mesh and opening the compressed air valve of the small auxiliary motor which turns the engine over. Opening the throttle and turning on the current will then cause the motor to take up its usual cycle of operations without further extraneous aid, and a reverse movement of the lever referred to severs all connection with the starter.

Next to this, measured from the point of its elaborateness, comes the Mors self-starting device. As a matter of fact, there is little to distinguish them on this score, except that probably the first cost would be less in the case of the latter. This contrivance takes the form of a means of supplying the cylinders with an explosive mixture under pressure directly instead of resorting to an outside source of mechanical power to accomplish the same end indirectly. It consists of an auxiliary carburetter, C, mounted on the dashboard as shown in the line sketch of the device herewith; a hand pump, P, attached to the chassis in a position convenient to the hand of the driver and a means of diverting the carburetted mixture into the cylinders, which is controlled by the handle, H, mounted on the dashboard alongside the tank carburetter, that has been given the euphonious appellation of "dynamogene." In order to start, the driver simply draws the lever H toward him and works the handle of the pump, which is then in communication with both the carburetter and the cylinders; the last step in the process is switching on the ignition.

The Richard-Brasier cars are to be equipped with a self-starting device, which is as yet said to be in the experimental stage and will not be adopted until more thoroughly tried out; but, judging from the lines along which this firm is working, the result will not alone be far simpler, but is apt to prove more effective and less liable to derangement. The sole object in view has been to provide a means of turning over the engine by hand without the necessity of leaving the seat. Nor has this firm been so ready to discard the crank altogether. It has been retained in its usual form, as will be apparent from the accompanying line sketch. If a start is to be made with its assistance, the lever M is pulled, which, by means of a fork, pulls the free wheel, P, cut with ratchet teeth, into engagement with the ratchet hub A keyed to the engine shaft. In case the start is to be made from the seat, it is only necessary to depress the foot pedal K, which insures the meshing of the ratchet; the lever L is then drawn back sharply, and this, through the medium of the cable and pulleys shown, turns the wheels P and with it the hub and motor shaft. When the lever L is returned to its normal position the wire cable is tautened by a spring, which prevents it from becoming slack. As the amount of movement obtainable in this manner is necessarily limited, any slackness of the cable would impair the efficiency of the device. The makers claim that it is nothing unusual for the motor to start on one pull of the lever.



MORS SELF-STARTER.

The Belt Bobs Up Again.

Nothing short of actual experience will suffice to convince the man whose gray matter becomes thoroughly permeated with an idea. Regardless of the utter lack of success that has attended the efforts of others in the use of the same device and its total abandonment for something proved to be infinitely better, he is bound to have his fling at it, cost what it may.

Thus it is that one of the light cars shown at the Paris Salon was equipped with the ancient and exasperating belt drive. The latter is not depended upon entirely, as gears are used in combination. The car is a light, two-seated runabout, with a single cylinder, 8 horsepower vertical engine, set at right angles to the customary position. That is, facing across the car instead of fore and aft. A train of sliding gears adapted to give two speeds forward and reverse is housed in an extension of the crank case, the shaft projection beyond the casing carrying on its end a pulley of the usual type. Through the medium of two belts, fixed together at intervals with spring pieces, this is connected with a double pulley mounted on a countershaft at the rear. The latter is practically in two parts, each having connected to it at the inner end one-half of the double pulley, the other end terminating in a pinion, which meshes with an internally toothed ring attached to each of the driving wheels, which are supported on a fixed axle. By the use of a double pulley and the divided countershaft the necessity of a differential is obviated, the belt slipping slightly on the corresponding part of the pulley in rounding a corner.

The need of a clutch is likewise overcome by mounting the gear box so that it may be swung backward slightly, thus slackening the belt, which is entirely encased from end to end—an expedient of doubtful value to take the place of the customary "idler," which had such an exasperating habit of "snipping" the belt in two when applied over precipitately. Despite the costly experience of pioneer makers with this form of transmission, there are still those who are willing to pin their faith to it, particularly in England.

The business of the W. F. Stewart Co., manufacturers of automobile and carriage bodies at Flint, Mich., has so grown that the company will build a large brick addition to its plant. It will be U-shaped, three stories high, measuring 600 by 60 feet.

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NEW TRUCK FROM BUFFALO

Characteristics of the New Vehicle—Even Sand Boxes are Provided.

One of the 1906 products of the Auto-Car Equipment Company, of Buffalo, N. Y., will be the three ton gasolene truck here illustrated, which, judging from its stable appearance should prove a most efficient factor in its own line of work. It is of thoroughly approved design throughout, and is built of well tried materials worked up in thoroughly workmanlike style.



The frame is made of seasoned oak, of 7 by 2½-inch section, mortised at the corners and armored throughout with steel plates, 3-16 by 6 inches. The wheel base is 95 inches, and the tread 52 inches, although upon order, a 75-inch tread will be furnished. The artillery wheels are of wood, fitted with fourteen spokes, two inches wide, and adapted to take on 36-inch tires. Endless rubber tires are used, being four and five inches in width in front and rear respectively. The frame is mounted on semi-eliptical springs in front, and platform suspension in the rear, all springs being 2½ inches wide and ribbed to preserve the alignment of the leaves. The axles are of hand forged solid stock, both being of 2½-inch square section. The steering arms are drop forged, and are of ample proportions.

The motor is located in the fore part of the machine under the driver's seat, in a vertical position. It is of the four cylinder pattern in common use, and develops 34-horsepower on the brake running at 1,000 revolutions per minute. The valves are mechanically operated, and are constructed of a special brand of stock which is particularly suitable for the work. Jump spark ignition is used with multiple distributor and single vibrator coil. The water circulating pump is gear driven from the main engine shaft and draws from the cellular radiator mounted in front under the footboard.

The transmission is of the sliding gear type, giving three speeds in advance, and a reverse, the final drive being by side chain from a counter shaft enclosed in the gear box, to the rear wheels. The gears are all of 6-pitch size, with one inch face, hardened. The differential, which is enclosed in the case is equipped with Timken roller thrust bearings to take up the strains of the bevel gears. The clutch shaft is fitted with a universal joint of approved type which serves to secure a free drive under all circumstances. The counter shaft is supported at the main frame members by means of heavy brackets which are fitted with especially long bearings. The chains used for the final drive are of the roller type with 1¼-inch pitch.

The mechanism of control is centred about a heavy vertical pillar topped by a 16-inch wood rimmed wheel. There are two sets of brakes, those for emergency use being of the internally expanding variety, setting up on drums cast with the rear sprockets, and bolted to the rear wheels. The normal speed of the machine is ten miles per hour, subject, of course, to the conditions of the road. The top as here shown, is made integral with the body, and is of the stationary type, but variations from this can be secured at the option of the purchaser. At the front of the driver's seat is a glass screen or wind shield, which reaches from the footboard to the top. The remainder of the enclosure is secured by means of heavy duck storm curtains which can be rolled up when not in use. The body is fitted with a drop tail gate and chains, while a pair of side gates are also fitted for greater convenience in loading under certain conditions.

One very noteworthy feature which though counting abong the lesser details, is still of no little importance to the driver, is that the rear wheels are fitted with sand boxes which can be made to discharge by opening a set of valves accessible from the seat. In general appearance, the neat and rational lines of the structure, taken together with its evident usefulness, furnish a pleasing basis, which is well set off by a plentiful amount of brass trimming, serving to accentuate its combined utility and symetry.

"Newness" in Ignition!

British ingenuity has just devised what is known as a "new" ignition system, which, upon analyzation, resolves itself into a jump spark system, the primary energy being furnished by a patent generator, which feeds the induction coil through an automatic switch, which throws in a set of accumulators when its voltage varies above or below a certain standard. The accumulator series is broken up into two sets for ignition, each set being used alternately, while the entire series is used for lighting purposes. Considering the invention merely in the light of the principles involved, it would seem as though the inventor had been conning over the old files of some of the American trade weeklies.

Increased Uses of Plate Glass.

A noticeable feature in the construction of several of the more elaborate closed bodies to be seen on the stands of foreign exhibitors at London and Paris, is the use of small French plate windows of heavy beveled glass. The object in their use is probably to increase the sumptuousness and cost of the structure, and it cannot be denied that the effect is pleasing insofar as mere appearance is concerned. The necessary increase in the amount of sash must, however, cut off a certain amount of light and dissect the view of the occupant into a group of thumb nail pictures.

"Invasion" that does not Invade.

Lend ear to the startling statement that the "Humber cars have invaded America." Of course, it is not mentioned whether it is North, South or British America that has been invaded. From the same source comes the statement that it is "surprising to the average American buyer" that accessories are furnished with the cars in question.

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TIRE TENDENCIES ABROAD

Paris Show Produced Little that is New—Non-Skid Devices Show Novelty.

But for the extent and variety of the devices designed with a view to preventing slipping, the exhibit of tires at the Paris Salon is said to have been commonplace and uninteresting. In fact, the ingenuity of the French maker seems to have been directed entirely to this end, so far as touring car tires are concerned. For heavy trucks the Ducasble tire, consisting of rectangular blocks of vulcanized rubber attached to a flat section rim and encircling it in two rows with their edges overlapping, presented a departure from customary practice in this regard sufficient to attract more than passing attention.

Quite a novelty in the design of a tire with the non-skidding device integral is termed the Gallus. On to this tread and engaging on each edge with the bead are placed a number of plates with their edges turned in. Each plate extends across the tread and over each edge, and is about an inch wide. Spaces of something like a quarter of an inch are left between them. The plates are kept in position by steel rivets passing from end to end and right through the thickened rubber tread of the tire sideways. While the beaded edge of the tread prevents lateral movement, the long rivets keep them the proper distance apart and prevent them from closing upon another under the tangential strain of the drive.

One of the novel modifications of the typical non-skidding device of continental origin embodied not alone a departure in design, but also a new material—vulcanite fibre. In the shape of bars about one and a half inches wide and three-eighths of an inch thick, these were fastened to the usual covering of chrome leather, vulcanized on the regulation flat tread tire. On each of these bars, three in a row, are rivetted hardened steel studs, the idea evidently being to supply a material in which the rivets will have a much firmer seat than in leather.

Of the detachable variety of anti-slipping and skidding devices, the Herault, appeared to be in a class of its own.

It consists of a complete chrome leather band encircling the wheel, and having scalloped edges. Each scallop terminates in a metal hook or grapple, which hooks under the beaded edge of the wheel rim. All round the centre of the band is fixed another thick leather band or belt about two inches wide, and at intervals of about an inch all along this belt are rivetted a number of malleable flat iron plates rectangular in shape. These project considerably above the surface of the tire, and form not only an efficient non-skid appliance, but also allow of a good grip being taken of the ground in greasy weather and prevent that slipping round of the wheel on the road which conduces so much to the rapid wearing out of tires and tire covers. Owing to the number of the hooks by means of which it is attached to the rim, there is little danger of its creeping or coming off the tire.

The demand for means of readily detaching the heavy touring car tires appears to be as strong on the Continent as elsewhere, and several makers have attempted to meet it by supplying a variety of devices, the majority of which take the form of the detachable edge rim. A typical example of this is that used on the Peter's Union tire, of German make. The detachable edge of the steel channel rim has on its inner periphery a circular bead or channel, fitting into a corresponding groove in the wheel rim. This edge is slipped over the bed of the rim and is drawn down into its groove by a right and left hand sleeve operated by a turnbuckle. In order to detach the tire, the strain on this sleeve is eased off a few turns, which permits the lifting of the detachable edge and the complete tire can then be slipped off the rim. In placing the tire, the inner tube is first inflated so as to be perfectly snug in the outer cover, thus preventing its being nipped between the rim and bottom of the shoe in putting it on.

That old and familiar friend, the pneumatic ball tire, which has clung to existence despite the lack of appreciation shown it by users, came forth at the show in a new guise. It is now as a component part of Le Securitas metal elastic wheel that it is again on the scene. The latter consists of two flat steel rims on a wooden felloe, the space between them being occupied by a number of inflated rubber balls, while the outside rim carries a solid rubber tire. The rims are held in position by side plates bolted on and adapted to slide over each other. The latter also prevent any injury to the balls as well as the ingress of dirt.

Davenport Dealers Agree on Rates.

Davenport, Ia., automobile dealers have mutually agreed upon a schedule of prices for renting and storing machines for the ensuing year:

Gasoline—Any quantity, per gallon, 17½ cents. Gas engine oil—Any quantity, per gallon, 75 cents.

Storage of cars—No insurance; runabouts, per month, $9; touring cars, per month, $15. Price includes washing and polishing all brass parts once a week. Delivering cars and calling for same, extra, per month, $3.00. Extra washing—Runabouts, 50c; touring cars, 75c. Extra polishing—Runabouts, 25c; touring cars, 50c.

Dead storage—Runabouts, per month, $3.00; touring cars, per month, $3.00.

Livery—First hour, $3.50; second hour, $2.50; and every hour thereafter. To Rock Island Arsenal, per person, 50c; return, from Rock Island Arsenal, per person, 50c; call at residence, extra, 25c; return to residence, extra, 25c.

Labor—Automobile repairs, per hour, 60c.

NEWNESS IN MAGNETOS.

Of Two New Systems that Appeared at Paris One Seems Full of Promise.

A review of the tendency of French design in regard to ignition appliances as represented by the exhibits at the recent salon may be briefly summarized in the single word, "magneto." The continental maker now pins his faith so strongly to the alternating current machine, and particularly to the low tension type, of late that it is surprising to note that but one or two new claimants for fame in this field put in appearance among the many shown. The several makers whose machines have come to be known as standard were, of course, amply in evidence, and it is worthy of note that even in minor detail their designs have not undergone a change. Considering the fact that it has been customary to make changes as often as three times a year in some cases this would appear to bear testimony to the fact that some approach to finality of design has been reached.

Probably the only really new magneto shown was that placed on view by the Maison Brignet, of Paris.

In this type there are four sets of field magnets mounted in the form of a hollow cylinder through which the armature with four pole faces rotates on ball bearings. The armature has a primary and a secondary winding, and four distinct breaks of the magnetic field are obtained at each revolution of the armature shaft. A very simple high tension distributor is used, and the whole takes up much less space than is the case where the horseshoe type of permanent magnet is employed, while owing to its construction it can be run at half the speed for a given purpose than is the case with the usual type.

In the Carron system there would appear finally to have been evolved an arrangement beautiful in its simplicity and lack of parts. It is what may best be termed a purely electrical system of ignition as apart from the power taken from the motor to drive the magneto and generate the current; the latter performs all the offices of exploding the charge. It is something that numerous American experimenters have long sought, but apparently none of them have ever gone beyond designing the plug. The latter is nothing more or less than the familiar electro-magnetic device operated electrically by the same current that is relied upon to produce the spark. Probably half a dozen such have been evolved in this country in the past few years, none of which has up to the present met with any general success, some of them never having passed the experimental stage. These plugs consist of nothing more or less than the time-tried solenoid and plunger—in daily use to the number of thousands throughout the country, principally in the form of circuit-breaker actuating

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devices on generator switchboards. They are relied upon through the actuating impulse given them by the current to operate the circuit make and break in the cylinder, in place of the mechanically moved hammer and anvil which they displace, and neither in principle nor design has any inherent defect been found to characterize them. But their use in connection with batteries or any other source of energy requiring to be constantly renewed has proved impractical owing to the large amount of current consumed. This would appear to be the only reason that has militated against their adoption.

In the Carron system this is overcome by the employment of a substantial low tension generator of the simplest type, with the single wound, H type of armature. The operation of the plugs in which the plunger is held under the tension of a spring against the magnetic pull, is timed so as to coincide with the period of highest induction in the magneto armature—the crest of the wave, or point of maximum output of the machine, which results in a very heavy spark. For show purposes a huge model of the plug was exhibited in connection with the lighting mains, and the resulting spark is said to have been blinding.

Gabriel's Newest Horn has Eight Notes.

The person who wrote the perverted proverb, "By their toots ye shall know them," must have had the Gabriel horns in mind when he rhapsodized for the saying is applicable. The Gabriel Horn Manufacturing Company has been making two, three and four chime horns that jerk out discordant and unmusical notes, but their latest creation—an eight chime horn—is claimed to be musical. Like the other models the new horn uses the engine exhaust for "breath," the exhaust being regulated by a valve and worked by a foot lever. The eight pipes are made of brass, lacquered to prevent tarnishing, and can be attached to either side or under the car. A keyboard arrangement is placed on the side of the seat to sound the notes. It is claimed that any ordinary tune, of one octave range, without sharps and flats, can be played upon it. If such is the case its scope of utility would therefore be unlimited.

Names for Motor 'Buses.

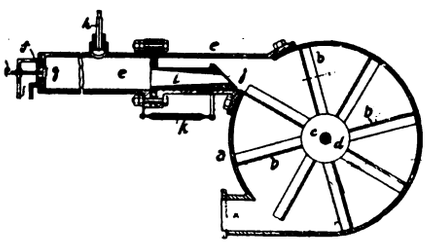
Soon London's motor 'buses will be in the same position as Pullman cars and apartment houses in this country—hard put to it for want of appropriate names. "Pioneer," "Vanguard" and "Arrow" have already been pre-empted by some of the first comers in the field, and are said to recall the old time horse-drawn affairs that were considered wonders in their day, some of which were known as "Marvels," "Monsters" and "Favorites," the last of which still exists. The rush for names is said to be such that it is the custom to incorporate nominally with a capital of $500, merely to pre-empt a name, some of those said to be "ear-marked" for future exploitation being the "Mercury," "Rocket," "Dart" and "Express."

EVOLVING THE GAS TURBINE

Another Effort in that Direction Makes its Appearance—How it Operates.

Somewhat similar in its construction to the Retz motor, to which reference was recently made in these columns as having been the only gas turbine on exhibition at the Paris show, and the first ever to be seen at an exhibition of the sort, the Ekersley rotary motor, another unlooked for outcropping, is however, constructed on the jet principle. In the latter the action derived from the exploded gas is wholly impulsive, no attention whatever being paid to the expansive properties of the working fluid, once they have reached the rotary member of the motor.

As will be seen from the accompanying diagram, it consists essentially of a cylinder fitted with an automatic admission valve and means of ignition in the usual manner, which, however, is not fitted with any form



of piston, and which terminates in a sort of jet, the opening from which is closed normally by a valve held to its seat by a spring of just sufficient strength to retain it in the closed position except during the period of explosion. The cylinder is mounted in close connection with the casing which encloses the rotary member, the axial line being tangential to the periphery of the latter. The rotary member itself consists of a series of radial vanes of V-shaped cross-section, which are mounted on a common boss or hub, which is fast upon the driving axle of the motor.

In action, a mixture of gas and air is admitted under pressure to the cylinder, where it is retained by virtue of the tension of the spring, k, the valve, g, closing the admission port, f, as soon as the cylinder or combustion chamber is filled. The ignitor, h, then fires the charge, and the sudden increase in pressure causes the valve, j, to open against the tension of the spring, k, and the burning charge issues with great velocity against the vanes, b, of the rotor, c-d, causing it to revolve with great rapidity, the spent gases issuing from the exhaust port, X, after having done their work. Some sort of carburetter and compressor are, of course, essential to the device.

It is evident that the effect of the expansion of the charge against the vanes of the rotor would be precisely the same as though the gas were a perfectly inelastic fluid, and the action and power derivable from the motor would be similar to that obtained from a water wheel of similar construction. Despite this drawback, which would apparently deprive the gas of all further usefulness as soon as any one portion of it became imprisoned between a pair of vanes by the passage of the second of them by the port or opening into the cylinder casing, e, the principle seems readily applicable enough, and should produce a rapid and smooth working motor, albeit one which would not be over-efficient.

Protecting the Machinery from Dust.

In the refinement of the motor and its housing, no attempts have been made up to the present time to guard the external parts from the clouds of dust which are constantly being sucked into the hood from the radiator, both under the induction of the fan and from the natural draught of the machine itself. As all the exposed parts of the mechanism are more or less fully coated with oil, the result is that they soon become gritty and carry more or less of foreign matter into the bearings in which they work.

This effect is even more marked in machines of the type in which the fan is incorporated in the flywheel, for there the draught carries all foreign matter through the entire length of the hood and drops it behind the flywheel, while in the type in which the fan is mounted directly behind the radiator the greater portion of the dirt falls on the fore part of the motor, leaving the valve stems and other parts comparatively free. Evidently the remedy is to be wrought out by some method of screening the blast after it has done its work in the radiator, or else by deflecting it away from the motor altogether and relying entirely on the efficiency of the water jacket to maintain the proper working temperature.

Motors to Oust More Mules.

Mexico Consolidated, a mining company in the country from which it derives its name, has ordered a motor truck, according to Boston advices, with the view of replacing the old method of transporting ore by mule teams. The present cost for hauling ore is $21.50, Mexican currency, per ton, and it is calculated the new method will reduce the cost of haulage $6 or $7 per ton. So far as known, it will be the second time the automobile has been used for this purpose.

What the Thieves Found.

According to advices from Utica, N. Y., thieves entered the old plant of the Black Diamond Automobile Co., at Niagara and Broad streets, one night last week and removed a quantity of brass pipe and five-cent novels. Just what part the novels played in the former manufacture of automobiles is not stated.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau street, New York.

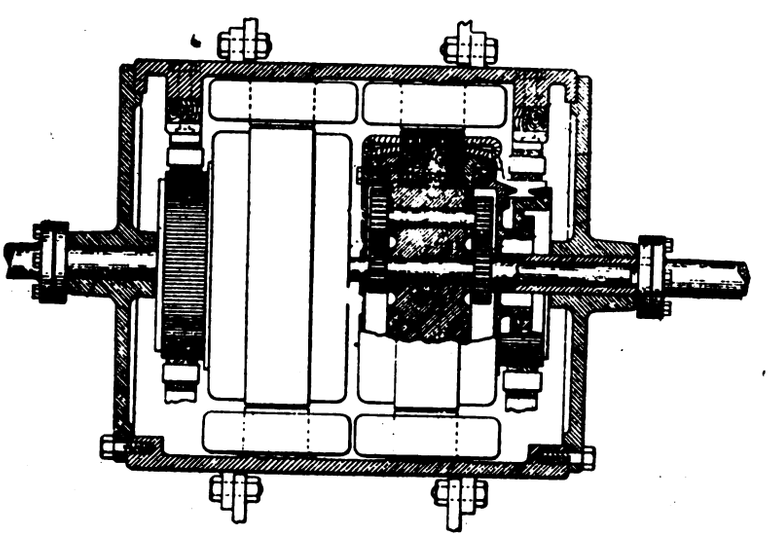
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ELECTRIC CHANGE GEARS

Invention is Persistent Despite Failure of Early Type—Two of the Late Comers.

Despite the small amount of success that has thus far rewarded the efforts of those who are seeking the perfected change speed gear through channels that involve the use of electricity, there appears to be no let up on the part of these investigators, as it is attested by the frequent appearance of such devices in the patent records.

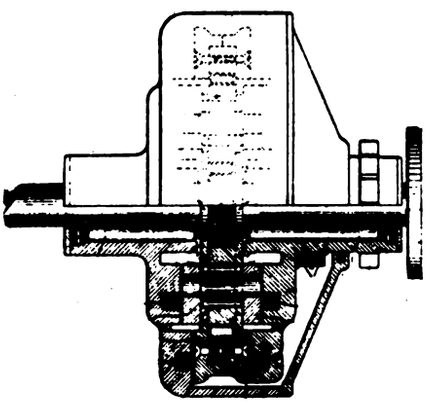
As has been referred to in these columns on several occasions in connection with descriptions of similar devices previously brought out here and abroad, there would appear to be no inherent defect in the use of electricity and its related force, magnetism, for this purpose. Experiments carried out with widely varying types of apparatus all, however, based upon the same principles, have demonstrated beyond a doubt that an electro-magnetic clutch or change speed gear, is not alone a possibility, but holds forth alluring promise of simplicity and flexibility.



ELECTRIC TRANSMISSION.

But a condition precedent to its successful application on the every-day car involves a solution of the problem that has bothered automobile builders for years—the maintenance of a satisfactory source of current on the vehicle.

Probably the generation of a small amount of current at a much higher voltage than that usually employed for ignition purposes—such as 50 or 100 volts by means of a small direct connected generator driven by the engine, may not be attended by the same difficulties that have made themselves felt in the use of small direct current generators of any kind on the automobile. With a speed constantly fluctuating between such widely varying limits, it has been found a difficult matter to prevent the dynamo from being burned out through overspeeding, or failing to generate sufficient current when the speed dropped too far below normal. There is, of course, the possibility that with the aid of such a change speed gear the engine could be run almost continuously at a speed that would always approximate the normal, regardless of the road condition, load or grade. Numerous forms of governors have been devised to prevent such a mishap in the case of the small ignition dynamo, but as the speed of the average automobile motor varies so rapidly and through such an extreme range this has been found difficult and it is nothing unusual to burn the armature out.



PLANETARY CHANGE SPEED GEAR WITH ELECTRO-MAGNETIC CLUTCHES.

Whether with the aid of a change speed gear that promises so much in the way of flexibility it would not alone be possible but practical under ordinary conditions to have the motor run at a rate of speed so nearly uniform as to render its rise and fall a negligible factor, remains to be seen.

In the most recent attempts at the solution of this problem of which two have appeared recently, both being credited to the General Electric Company, it is noticeable that for the first time, an effort has been made to apply the principle to the planetary type of change speed gear, the latter, a half-sectional elevation of which is shown in the accompanying sketch, makes use of independent magnetic clutches so arranged as to hold either the internal gear or the axis of the planetary gear stationary, and to lock either or both to the driven member. As will be seen, the general principle of the gear is in general the same as in the purely mechanical type, the gear on the driving shaft being surrounded by the usual plurality of pinions, a new feature consisting of the use of a ring-shaped member surrounding the shaft and which is supported on the axes of the gears. There is, further, the usual internal gear, revolubly mounted, and the magnetic clutches are adapted to hold either this or the ring-shaped member referred to stationary, or to lock either or both to the driven member.

The second follows in the main the lines laid down by previous investigators in this field; that is, the use of two generators, or rather a generator and a motor. In this case, as will be seen in the illustration, the change speed gear box itself is made to act as a common field piece for both, to which the pole pieces are bolted. The driving shaft enters at the right hand side, and instead of carrying the armature directly upon an extension of it, the drive is through planetary gearing, which is visible in partial section. The two machines are interconnected, both electrically and mechanically and means are provided for varying the speed and torque of both.

How Price of Rubber is Affected.

It used to be a common remark that so narrow is the margin between the production and consumption of rubebr that the loss of a single cargo at sea would notably influence prices, says The India Rubber World. The assertion has had partial proof of late, though as yet no important cargo of rubber has ever been lost on the high seas. But recently a shipload of 210 tons went down in the Amazon, and the first effect was an advance in London prices.

This was only temporary, however, since stocks were larger than for some time, and the hope prevailed that the sunken rubber would be raised. It now appears that all of the Cyril's cargo has been salved but seventeen tons. But a single ship has sometimes carried a thousand tons of rubber from the Amazon, and the loss of such a quantity in midocean would indeed upset all market calculations. The shippers might be protected by the insurance companies, but the world would miss the rubber. A consoling feature of the Cyril's case is that rubber is not injured by so slight an accident as being dumped in the bottom of a river for a few weeks. It is, indeed, subject to fewer ill influences than almost any other cargo known to commerce.

More Room for Boston Show.

In order to provide as much space as possible for the Boston show almost all the seats in the balcony of the Mechanics' Building, where it is to be held, will be removed. The additional room thus created will be divided among the applicants who unfortunately found themselves in the discard on the first allotment.

To Sell the Simplicies.

The work of winding up the affairs of the Simplicities Auto Company, of Middletown, Conn., which was first marked with considerable trouble, is progressing rapidly. The property has been inventoried, and an attempt will be made to sell the plant as soon as the affairs are in shape.

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The Week's Patents.

808,221. Speed-Changing Gear. Charles G. Simonds, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York. Filed August 27, 1904. Serial No. 222,374.

Claim.—1. In a speed-changing gear, a driving shaft, a pinion thereon, a planetary gear engaging said pinion, a revolubly mounted internal gear concentric with said pinion and engaging said planetary gear, a driven member, and magnetic clutches adapted and arranged to hold either said internal gear or the axis of said planetary gear stationary and to lock either or both to said driven member.

808,237. Tachometer. Caryl D. Haskins, Brookline, Mass., asignor to General Electric Company, a corporation of New York. Filed March 29, 1900. Serial No. 10,593.

Claim.—1. A magnetic speed indicator, comprising a field magnet, a movable armature and a movable low-resistance part in separated parts of the field of force of the magnet, one of the movable elements being revoluble and the other being oscillatory but biased to a normal position of rest, substantially as described.

808,263. Power Transmitting Mechanism. Elihu Thomson, Swampscott, Mass., assignor to General Electric Company, a corporation of New York. Filed November 26, 1902. Renewed August 22, 1904. Serial No. 221,706.

Claim.—1. The combination of a motive device, a current generating device having relatively movable members, connections between one of said members and said motive device, means for transmitting power through the medium of the reactive force exerted between said members when current is being generated thereby, and means for transforming a portion of the electrical energy of said current into mechanical energy, and applying it to the connections of the motive device.

808,289. Clutch. Alfred Lee, Bellingham, Wash. Filed December 20, 1904. Serial No. 237,702.

Claim.—In a device of the class specified, a loose member having an annular flange, a flanged disk arranged within said flange and provided with a radially-arranged recessed arm, said disk being provided with a peripheral groove terminating at one end in a stop-shoulder, a band arranged within the groove and having one end fitting against the shoulder, and its opposite end extending partly over the recess of said arm, a lever pivotally supported within the recess and having its outer end engaging against the free end of the band, a set-screw carried by the inner end of the lever, and a cam pin movable through an opening in said arm and serving by engagement with the set-screw to operate the lever.

808,306. Transmission Gear. Bennard H. Pomeroy, St. Louis, Mo., assignor, by mesne assignments, to St. Louis Car Company, a corporation of Missouri. Filed August 22, 1904. Serial No. 221,661.

Claim.—1. In a transmission gear, the combination of a driven shaft, a series of driven gearwheels of varying diameters fixed to said shaft, a drive shaft, a series of driving gearwheels of varying diameters loosely surrounding said driving shaft and having tapering faces at their sides, a slide collar provided with tapering faces adapted to engage the tapering faces of the driving gearwheels to permit the collar to pass into the central openings of the driving gearwheels, means for reciprocating said slide collar, shoes carried by said slide collar, and means for spreading said shoes to said driving gearwheels, substantially as set forth.

808,307. Clamping Device for Pneumatic Tires. Harry K. Raymond, Akron, Ohio; Maximilian C. Schweinert, West Hoboken, N. J., and Henry P. Kraft, New York, N. Y. Filed March 18, 1905. Serial No. 250,769.

Claim.—1. In a clamping device, the combination of a main nut and a lock nut, telescopically connected, and being capable of relative rotation.

808,336. Internal Combustion Heat Engine. John L. Bogert, New York, N. Y. Filed October 26, 1904. Serial No. 230,017.

Claim.—1. An internal combustion heat engine comprising two cylinders, one being a firing cylinder, and both provided with compression spaces that communicate by a passage, a check valve in the passage opening away from the firing cylinder, pistons in said cylinders, and a shaft having cranks respectively connected with said pistons, one of said cranks being located in advance of the other so that one of the pistons will have passed its inner dead point at the moment of ignition of a charge compressed by the other piston, substantially as described.

808,423. Vertical Explosive Engine. Alexander Winton, Cleveland, Ohio. Filed November 12, 1904. Serial No. 232,488.

Claim.—1. A vertical explosive motor for motor vehicles, comprising a vertically arranged crank case with an open side ending at practically the centre of the crank shaft axis and cylinders supported by the upper portion of the crank case and partly overhanging the open side of the casce, the said crank case forming an immovable support for itself and the cylinders with their cooperating parts, and a removable cap portion for the open side of the crank case adapted to be laterally removed therefrom, whereby access to the crank case can be readily obtained from the side thereof for the purpose of inspection, adjustment or substitution of the parts therein, substantially as described.

808,426. Cushioned Tire. Charles W. Adsit, Owatonna, Minn. Filed March 3, 1905. Serial No. 248, 202.

Claim.—1. The combination with a wheel rim of the two series of spring plates detachably clamped to said rim and making up a resilient sectional tube, a spring hoop having grooved edges with which the inturned ends of said spring plates interlock, and a sheath inclosing said rim, spring plates and spring hoop, and having its edges clamped to said rim, substantially as described.

808,572. Gas or Gasolene Engine. John Palmer, Philadelphia, Pa., assignor, by direct and mesne assignments, to F. S. Rutschmann, trustee, Philadelphia, Pa. Filed July 16, 1904. Serial No. 216,841.

Claim.—1. The combination, in a gas or gasolene engine, of a cylinder containing two separated chambers, each with an exhaust therefrom, connected pistons, one in each chamber, an inlet for the motive fluid, communications between the inner and outer ends of each cylinder chamber, said communications being independent of the exhaust passages, and valve mechanism independent of the piston and operated from the engine shaft, said valve mechanism providing for the flow of motive fluid from one end of the cylinder to the other, while the exhaust from the latter end of the cylinder is open, whereby the first inflow of said motive fluid serves to expel the spent gas from said end of the cylinder, substantially as specified.

808,579. Rotary Valve for Gas Engines. Fayette M. Seeley, Lansing, Mich. Filed July 14, 1904. Serial No. 216,510.

Claim.—1. In a rotary valve, the combination with an engine cylinder having a cylinder port, of a valve housing, the said housing having circular, depressed valve seats provided with inlet and exhaust ports in communication with the said cylinder port, the said housing having a shaft bearing extending centrally between the said valve seats, a shaft revolubly in said bearing, disk valves arranged in said seats and secured to the shaft, the said valves having suitably disposed ports, and detachable heads covering the said valves, substantially as described.

808,551. Ignition Device. Leon J. Le Pontois, New Rochelle, N. Y., assignor to Polyphase Ignition Company, a corporation of New York. Filed November 7, 1903. Serial No. 180,176.

A sparking system comprising two or more insulated electrodes located in the ignition chamber of an internal combustion engine, ground connections for said electrodes, and means to simultaneously disconnect said electrodes from their ground connections so that the respective circuits of a polyphase current generator leading to said electrodes may be simultaneously interrupted.

808,552. Magneto Alternator. Leon J. Le Pontois, New Rochelle, N. Y., assignor to the Polyphase Ignition Company, a corporation of New York. Filed September 24, 1904. Serial No. 225,853.

A polyphase alternator comprising a rotor consisting of a permanent magnet, having a plurality of separately magnetized steel laminae, substantially annular in shape and so magnetized that two consequent poles are formed at opposite ends or the same diameter.

808,553. Method of Igniting Combustible Mixtures. Leon J. Le Pontois, New Rochelle, N. Y., assignor to the Polyphase Ignition Company, a corporation of New York. Filed September 24, 1904. Serial No. 225,854.

The method of producing sparks suitable for igniting combustible mixtures, consisting in alternately short circuiting, one of two alternating currents differing in phase from each other near the period of minimum intensity of its alternation and while it is short circuited interrupting the other, at or near the period of the maximum intensity of its alternation.

808,554. Apparatus for Generating and Utilizing Polyphase Alternating Currents for the Ignition of Explosive Mixtures. Leon J. Le Pontois, New Rochelle, New York, assignor to the Polyphase Ignition Company, a corporation of New York. Filed October 7, 1904. Serial No. 227,548.

A system for igniting combustible mixtures in internal combustion engines, comprising a polyphase alternating current generator, having its rotor driven at a speed proportional to that of the engine shaft, and means for varying the time of operation of the sparking device constructed to connect electrically said device to the generator at the time of generation of either of the alternating currents or both of them jointly according to the respective intensities.

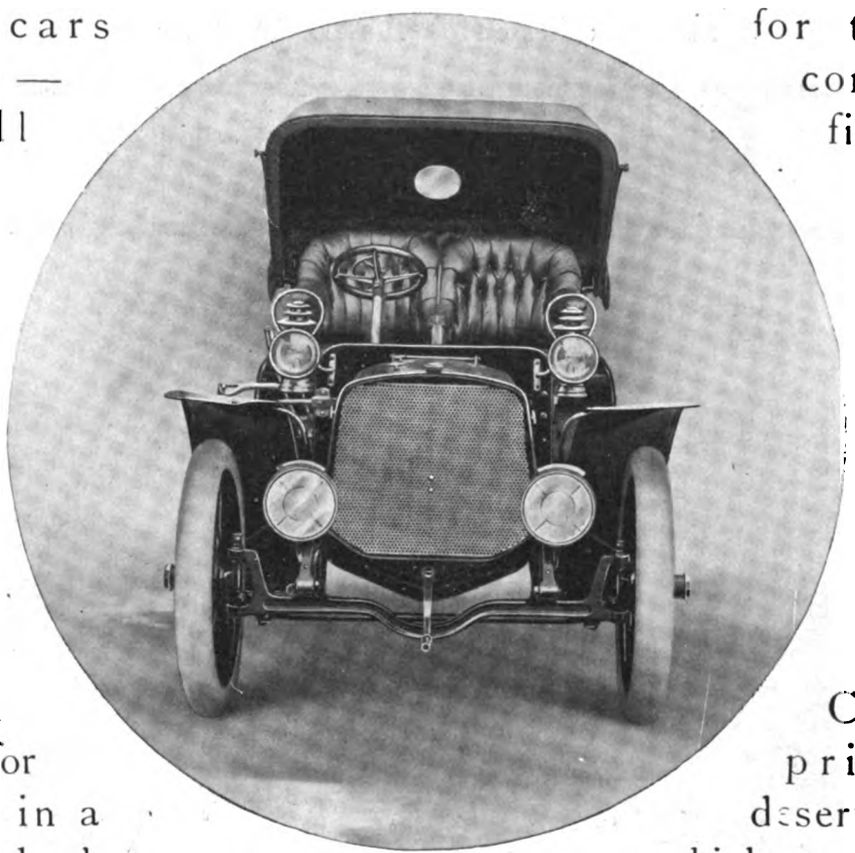
808,307. Clamping Device for Pneumatic Tires. Harry K. Raymond, Akron, Ohio, Maximillian C. Schweinert, West Hoboken, N. J., and Henry P. Kraft, New York, N. Y. Filed March 18, 1905. Serial No. 250,769.

Claim.—1. In a clamping device, the combination of a main nut and a lock nut, telescopically connected, and being capable of relative rotation.

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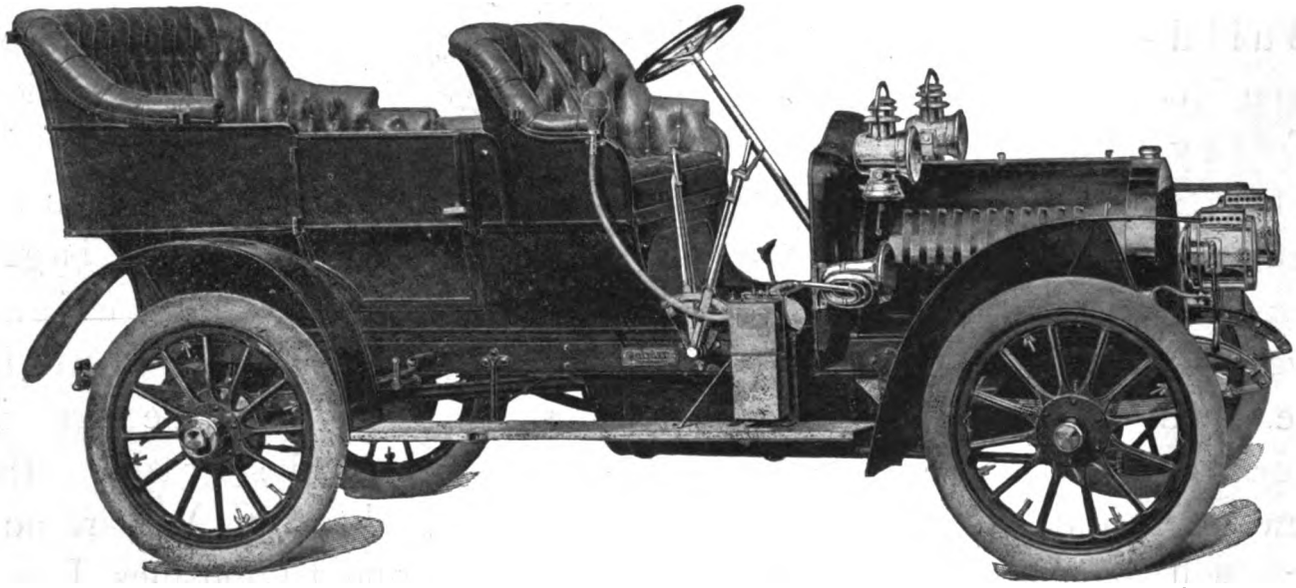
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The Week's Patents.

807,457. Driving Attachment for Automobiles. Benjamin A. Gramm, Chillicothe, Ohio. Filed July 28, 1905. Serial No. 271,652.

Claim.—1. The combination with the frame and driving mechanism of an automobile, a shaft readily attachable to and detachable from said mechanism; and a support for said shaft readily detachable from and attachable to the outside of said frame.

807,479. Carburetter. Julius H. Mason, Duncan Falls, Ohio, assignor of one-fourth to Wilson S. Sprague, Zanesville, Ohio, and three-eighths to Spencer M. Garrett, Philo, Ohio. Filed March 10 1905. Serial No. 249,358.

Claim.—1. In a carburetter, the combination with fuel supply means, of a mixing casing, a valve yieldably held to normally cut off the supply of fuel, an air admitting valve having a stem adjacent the fuel valve, and means carried upon the stem of the air valve for moving the fuel valve to admit fuel when the air valve is moved, and means for adjusting the said last-named means to vary the relative movements of the valves.

807,536. Vehicle Wheel. Stanislaus Berens, Lagrange, Ill. Filed April 14, 1905. Serial No. 255,479.

Claim.—In a vehicle wheel, the combination with a hub having a series of radial sockets, a series of rods secured in said sockets, a tubular section loosely surrounding each of the said rods at their outer portions, a spring located in each of the tubular sections between its outer end and the inner end of its rod, means on each of the tubular sections to regulate the tension of the spring therein, and a rim secured to the outer portions of the tubular sections, substantially as described.

807,537. Pneumatic Tire. Edgar M. Birdsall, Buffalo, N. Y., assignor of one-half to Mary B. Birdsall and one-half to Fletcher J. Barron, Buffalo, N. Y. Filed January 26, 190. Serial No. 261,665.

Claim.—1. The combination of an inflatable tire section, a connecting tube arranged in the end of the section and communicating with the air chamber thereof, and an inflatable packing interposed between said tube and the surrounding portion of the tire section, substantially as set forth.

807,569. Explosion Motor. Barton S. Molyneux, Buffalo, N. Y. Filed March 5, 1904. Serial No. 196,657.

Claim.—1. A motor comprising a movable impulse member, a pressure chamber having an outlet whereby the contents of the chamber are directed against said impulse member, a valve controlling said outlet, and a piston arranged to be acted upon by the pressure in the chamber and operatively connected with said valve, substantially as set forth.

807,611. Non-Skidding Cover for Tires. Edward Fairburn, Brighouse, England. Filed July 24, 1905. Serial No. 271,086.

Claim.—1. In a tire armor, the combination, with a channel-shaped ring of leather, of a series of leather rings, a series of rings formed of metallic links, both series of rings being arranged in the said channel-shaped ring, and pins pivoting the said links together and passing through the said leather rings and the flanges of the said channel-shaped ring.

807,612. Vehicle Spring. Samuel Furmidge, St. Louis, Mo., assignor to Supplementary Spiral Spring Company, St. Louis, Mo., a corporation of Missouri. Filed November 16, 1904. Serial No. 232,934.

Claim.—1. In an auxiliary or supplementary vehicle spring, the combination of a means for connecting same with the vehicle supporting spring, a separate means for connecting same with the leaf-spring, a pair of helical springs connected to said first-mentioned means, members rigidly connected to said helical springs connected also with said second-mentioned means, said helical springs being wide enough across the top to accommodate all lateral play of the parts in rigid connection therewith which connect same with the leaf-spring, substantially as described.

807,623. Motor Vehicle. John W. Lambert, Anderson, Ind. Filed April 3, 1905. Serial No. 253,469.

Claim.—1. In a motor vehicle the combination of a driving disk, a driven disk and a shaft carrying this latter disk, movable bearings on this shaft, means for shifting these bearings to engage and disengage the driven disk, springs pivotally depending from the frame of the vehicle and supporting the rear axle thereof, so that said axle may move bodily forward and backward, sprocket wheels connected to the rear wheels, sprocket wheels on the driven shaft and chains connecting said sprocket wheels, and adjustable rod connections between the rear axle and said movable bearings, for the purpose set forth.

807,627. Power Transmission Device. George W. Marble, Chicago, Ill. Filed December 7, 1904. Serial No. 235,867.

Claim.—1. The combination with a friction wheel of a friction disk on each side thereof, means for adjusting said friction wheel radially of said disks, adjustably connected levers engaging the outer sides of said disks and means engaging the same acting to move said disks simultaneously one into and the other out of engagement with said friction wheel.

807,633. Tire. John F. McCanna, Chicago, Ill. Filed August 15, 1904. Serial No. 220,726.

Claim.—1. A device of the class described, consisting of a rim, and a series of circumferentially-abutting blocks having flat tread-surfaces and inclined sides and ends and radial abutting portions.

807,692. Yieldable Gear. Harry B. Stilz, Philadelphia, Pa. Filed January 14, 1905. Serial No. 241,089.

Claim.—1. The combination of a shaft, a wheel secured to the shaft, a gear concentric with and rotatable relative to the shaft and having a friction surface, a split band loosely fitted around the circumference of the wheel, a key secured to the wheel in a position to react upon the thrust end of the band, and a mechanism by which a force is applied to the slack end of said band for actuating the band upon the said friction surface.

807,744. Vehicle Tire. Charles A. Immler, Akron, Ohio. Filed January 26, 1905. Serial No. 242,790.

Claim.—1. The combination with a clencher rim having inturned flanges forming channels, of a solid rubber tire to fit said channel, having a longitudinal convex or oval bead at the centre of the side of said tire, having at intervals loop springs containing one or more convolutions at their centre, and embedded transversely across said tire and near the base of said tire with their ends extending outward and slightly upward to the outer edge of the said tire and contained within the inturned flanges of the clencher rim, with key made with a washer at end to be inserted in the base of said tire, said key to have a hole or opening through its end near the washer for the purpose of permitting the ends of the longitudinal wire to pass through, said key to have a square end to pass through an opening in the clencher rim and felly and to be held in place by the felly plate, which has a square opening in its centre and which plate is made to fit over the felly, all as substantially shown and described.

807,748. Elastic Vehicle Tire. Godfred Knadler, Akron, Ohio. Filed July 31, 1905. Serial No. 272,089.

Claim.—An improved tire for a vehicle wheel consisting of an endless body of elastic material, provided throughout with an approximately centrally disposed annular opening elliptical in cross-section, the major axis of which is radial with the wheel on which the tire is mounted, and further provided with a cut extending from said opening to the base portion of the tire circumferentially throughout the entire tire body, the base portion of said tire being so formed as to fill and be compressed by the rim in which said tire is mounted whereby the edges of the base portion along said cut are maintained in constant contact excepting under the influence of excessive pressure applied to said tire, said tire body being further provided with a convex tread and side portions united by concave lines and concave portions extending from the lateral convex portions to the base portion of the tire.

807,771. Speed Changing and Transmission Gearing. Irvin H. Pleukharp, Columbus, Ohio. Filed May 10, 1905. Serial No. 259,804.

Claim.—1. The combination with a gear wheel, of a larger gear around the same, ratchet means connecting said gears, pinions in mesh with the respective gears, and means for turning either of said pinions.

807,789. Guiding Device for Motor Vehicles. Zachary T. Sweeney, Columbus, Ind. Filed June 22, 1905. Serial No. 266,452.

Claim.—1. A guiding device for motor vehicles comprising a hood carried by a steering wheel of the vehicle and extending forward therefrom, adapted to contact with an obstruction and to deflect the steering wheel to guide the vehicle past the obstruction.

807,831. Folding Foot Rest for Automobile Tonneaus. Ralph A. Leslie, Cleveland, Ohio, assignor to The Winton Motor Carriage Company, Cleveland, Ohio. Filed July 15, 1905. Serial No. 269,836.

Claim.—1. The combination with a vehicle having a front and a rear seat, of a folding foot rest located between the seats and adapted to be supported in a rearwardly inclined position in front of the rear seat to form a foot rest for the passengers of the rear seat.

807,832. Steering Axle for Motor Vehicles. Thomas J. Lindsay, Indianapolis, Ind. Filed July 14, 1905. Serial No. 269,677.

Claim.—1. The combination of a T-shaped spindle structure embodying bearing portions and ends beyond the bearings to receive a steering arm, a steering arm adapted to be removably secured to one of said ends, a two-part bearing structure in which said spindle structure is mounted, an axle, and means whereby said two-part bearing structure is securely united to said axle.

807,839. Flexible Rim for Vehicle Wheels. William G. Marr, Springfield, Mass., assignor of one-third to James P. Hillard and one-

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third to Richard J. Talbot, Springfield, Mass. Filed March 1, 1905. Serial No. 247,902.

Claim.—1. In combination with a wheel for vehicles, sections, each having a spiral spring, a metal rod, a socket for said rod and a cover, fitted to the spokes or on the rim of a wheel, a flat spring between each spring section curving in the centre toward the hub of said wheel, a sectional tire, each tire section bearing on two spring sections and on the spring between each of said spring sections, substantially as specified.

807,949. Magneto Alternator. Leon J. Le Pontois, New Rochelle, N. Y., assignor to PolyPhase Ignition System Company, a corporation of New York. Filed October 20, 1904. Serial No. 239,310.

Claim.—1. An alternating current generator having a field magnet consisting of a permanently magnetized ring formed of a continuous steel ribbon, pole pieces located at opposite ends of the same diameter and coils supported thereon, and an inductor mounted to rotate in close proximity to said pole pieces.

807,950. Gas Engine. Robert Longtine and Edward Double, Los Angeles, Cal. Filed August 17, 1904. Serial No. 221,062.

Claim.—1. In a gas engine, in combination with the cylinder and piston, an exhaust valve, means for opening the exhaust valve by the pressure of the exhaust gas, a rod carried by the exhaust valve having a notch, a pivoted locking bar for engaging the notch, and means co-operating with the piston for actuating the locking bar.

807,958. Motor Vehicle Running Gear. Ransom E. Olds, Lansing, Mich. Filed October 29, 1904. Serial No. 230,470.

Claim.—1. In a motor vehicle running gear, the combination with the front and rear axles, of a rigid underframe comprising front, rear and side members, the rear member forming the rear axle sleeve and central gear casing inclosing the transmitting gear for the live axles, and the side members composed of forward and rear portions, the forward portions of which form the sides of a semi-independent forward portion of the frame and support the frame upon the forward axle and the rear portions of which are separably connected with the rear corners of the forward portion of the frame, one of said rear portions forming with part of the rear member and gear casing an independent detachable part of said underframe.

807,961. Metallic Tire. Walter J. Paton, Galva, Kans. Filed June 14, 1905. Serial No. 265,251.

Claim.—1. A tire composed of a plurality of tubular sections, each section consisting of relatively movable members, means connecting said members, and a spring interposed between said members.

807,968. Suspension Device for Vehicles. Peter H. Seery, Newark, N. J. Filed July 14, 1905. Serial No. 269,604.

Claim.—1. A member having a cam projection on one face, a second member having a depression on its face constructed to receive said cam projection, means for holding said faces in resilient contact and means for rotating one of said members.

808,002. Differential Gear. Robert H. Brockman, New York, N. Y. Filed July 27, 1904. Serial No. 218,360.

Claim.—1. The combination of two driven members, a belt connecting the two, a member engaged with the belt intermediate the driven members, and a gear wheel adapted to receive a driving movement, the gear wheel having an orifice therein in which the last-named member is loosely mounted.

808,047. Differential Gearing. Frank M. Haldeman and Bluford W. Brockett, Cleveland, Ohio. Filed September 29, 1905. Serial No. 280,582.

Claim.—1. In a differential gear, the combination with the axle sections, of driven gears upon said axle sections, beveled driving pinions diametrically opposed to each other with respect to said driven gears for driving the same, and spur gear differential driving mechanism for said pinions wholly within the peripheries of said driven gears.

808,074. Tire-Cover. Jean C. Dufour, Charenton, France. Filed April 3, 1905. Serial No. 253,513.

Claim.—1. In protective and non-skidding tire covers for the wheels of automobile carriages or other vehicles the combination of a double tread placed exteriorly on a leather cover which completely surounds the air tube; studs or rivets on the tread band to produce an unpuncturable and non-skidding pneumatic tire; means for preventing the leather of the cover to be cut by the rivets, said means consisting in an intermediate leather band and washers; a leather crescent-shaped layer composed of two parts with a free space or gap between them; another similar continuous layer.

808,208. Jack for Automobiles. Lee R. Maxwell, Cedar Rapids, Iowa. Filed November 11, 1904. Serial No. 232,337.

Claim.—1. A jack for elevating automobiles or other vehicles, comprising base bearings, supports fulcrumed in said bearings, trackways secured to said supports and adapted to be tilted by the weight of the automobile, and means of maintaining the trackways in substantially horizontal position.

808,210. Internal-Combustion Engine. Edward S. Palmbla, Waukegan, Ill. Filed December 14, 1904. Serial No. 236,784.

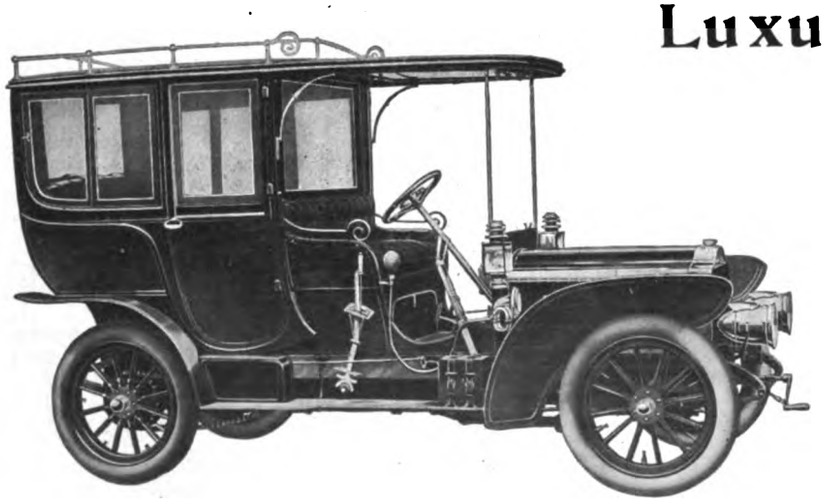
Claim.—1. In a device of the class described, the combination with a cylinder of an engine having an inclosed crank case, of a piston movable in the cylinder and opening between the cylinder head and crank case, a check valve closing said opening, an exhaust port opening from the cylinder head and an inlet port opening into the crank case, valves controlling said ports and means for operating said valves to produce two-cycle and four-cycle movements of the piston.

808,220. Power-Transmission Mechanism for Automobiles. Charles D. Simonds, Schenectady, N. Y., assignor to General Electric Company, a corporation of New York. Filed June 22, 1904. Serial No. 213,642.

Claim.—1. In a power transmission mechanism, a driving shaft, a gear carried thereby, a driven shaft, a gear carried thereby, a dynamo-electric machine, a shaft carried thereby, two gears carried by said shaft and engaging the first two gears respectively, and a second dynamo-electric machine connected in circuit with the first.

808,234. Emergency-Brake. Walter M. Gooch, Dayton, Ky. Filed March 27, 1905. Serial No. 252,136.

Claim.—1. In an emergency brake, a head suitably mounted, a member movably secured thereto adjacent a wheel, a rack on said member, a toothed wheel adapted to engage said rack, a shaft on which said toothed wheel is mounted, a chain secured to said shaft and adapted to be wound thereon and means for unwinding said chain.



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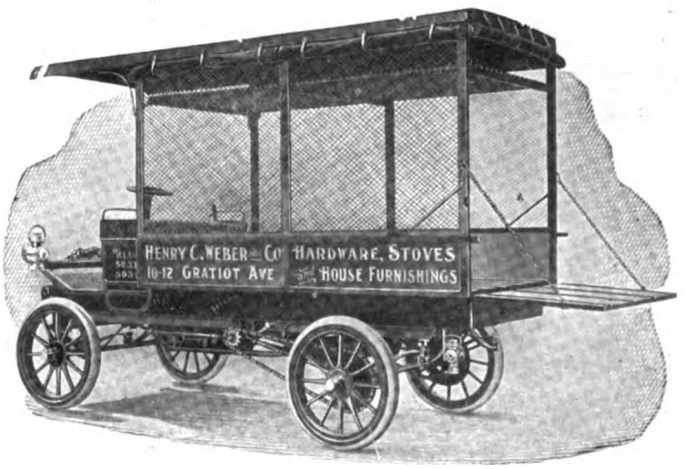
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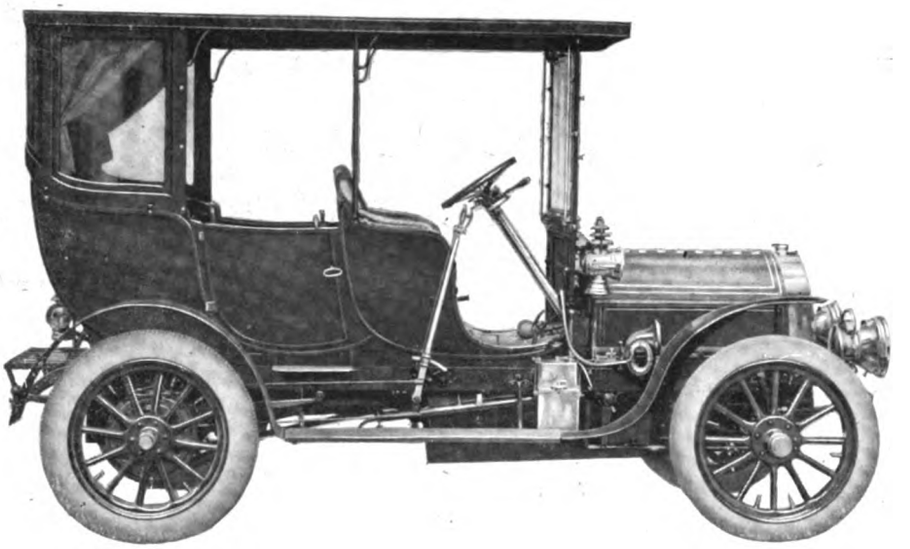
STA-RITE "STAYS RIGHT THE LONGEST" **SURETY**

Messrs. Clemens & Merz were ***sure*** of the four No. 4 "Sta-Rite" Plugs which fired 850,000 charges in 24 hours—distance 1094 miles. You can always be just as sure of any of the 47 sizes of Improved "Sta-Rites" (six types). Insist upon having "Sta-Rites" in your ***new*** car and save bother. Garden show space No. 78. Armory show space No. 61 Coliseum show space No. 178

THE R. E. HARDY CO.
225 West Broadway NEW YORK CITY

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PIERCE



This is the Great Arrow Victoria Tonneau, 40-45 H. P. with semi-enclosed top. Price without top, $5,000. Semi-enclosed top, $350 extra. Cape top, $200 extra. Folding glass front, $50 extra.

One convincing proof of the excellence of Pierce cars is the fact that they appeal most to the most mechanical minds. An automobile is a machine. The more a man understands about the principles of mechanics, the better he appreciates the way in which the Pierce Arrow is made.

The initial cost of a Pierce Arrow is greater than that of any automobile made in this country, but the price seems low when compared, not only with the small cost of maintaining, but with the long time of service given.

Pierce Arrows are never out of date as far as effective service is concerned.

Catalogue and descriptions mailed on request.

THE GEORGE N. PIERCE COMPANY,

BUFFALO, N. Y.

Members Association of Licensed Automobile Manufacturers.

Pierce Arrow Exhibited in Madison Square Garden Only.

LIST OF DEALERS:

Baltimore,	Southern Auto. Co., 2021 Maryland Ave.	Philadelphia,	Foss-Hughes Motor Car Co., 201 N. Broad St.
Boston,	J. W. Maguire Co., 745 Boylston St.	Pittsburg,	Banker Bros. Co., Baum and Beatty Sts.
Buffalo,	The George N. Pierce Co., 752 Main St. (Retail)	Portland, Oregon,	H. M. Covey.
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Los Angeles,	Bush & Burge, Cor. 7th & Main Sts.	Springfield, Mass.,	E. R. Clarke Auto. Co., 117 Lyman St.
Louisville,	The Zorn-Strauss Co., Inc.	Syracuse,	Amos-Pierce Auto Co., 109 S. State St.
Milwaukee,	Hibbard Automobile Co.	St. Louis,	Western Auto. Co., 4701 Washington Blvd.
New York,	Harrolds Motor Car Co., Broadway, 58-59th Sts.	St. Paul,	C. P. Joy Auto. Co., 368 Minnesota St.
Ottawa & Montreal,	Wilson & Co., 142 Bank Street.	Toronto,	Auto & Supply Co., Ltd., 24 Temperance St.
Oakland, Cal.,	The George N. Pierce Co., 1013 Clay St. (Wholesale)	Troy, N. Y.,	Troy Auto. Exchange, 22 4th St
		Utica, N. Y.,	Utica Motor Car Co.

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"THE OLD SHOW IN THE NEW ARMORY"

Sixth Annual Automobile Show

of the Automobile Club of America

SIXTY-NINTH REGIMENT NEW ARMORY

Twenty-sixth Street near Fourth Avenue, New York City

JANUARY 13 to 20, 1906

LEADING AMERICAN AND FOREIGN EXHIBITORS

Gasoline Steam Electricity

The Open Exposition of a Great Industry

PENNSYLVANIA CLINCHER

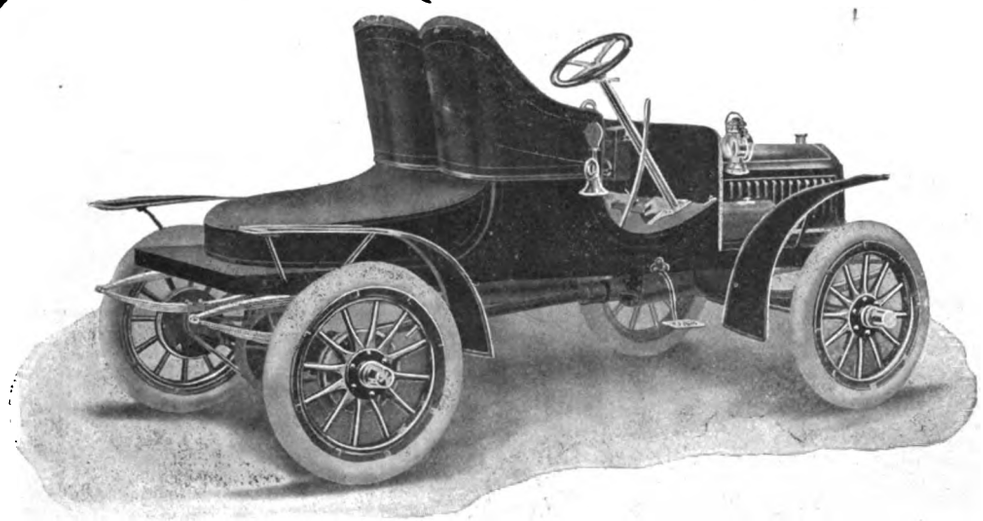
The flat-tread racing type will be exhibited for the first time at the New York Shows.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

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Wayne

ONE OF OUR 1906 MODELS



Wayne Model H, $800. Two-Passenger Runabout.

MOTOR, 2-cylinder opposed under hood. Cylinders, 4½ x 4, developing 14 H. P., water-cooled. TRANSMISSION, planetary gears, with DIRECT BEVEL GEAR DRIVE. Control is by a single lever, which engages the high speed clutch and reverse. The brake and slow speed are controlled by foot pedals. WHEELS, 28 x 3. EQUIPMENT, complete set of tools.

The strong features of this car are the extreme simplicity of the engine and transmission. The crank case and transmission case form one casting, and the entire engine can be taken apart or assembled in half an hour.

MODEL F, 4 cylinder car, cylinders 5½ x 5, 50 H. P. Seating 7 people....	Price, $3,500
MODEL K, 4 cylinder, 5 passenger touring car. 35 H. P. Sliding gear transmission	Price, $2,500
MODEL B, 4 cylinder, 5 passenger car, 24-28 H. P. Sliding gear transmission	Price, $2,000
MODEL C, 5 passenger car. Double opposed motor, 20 H. P. Planetary transmission	Price, $1,250

The Wayne Agent can supply a high grade car at any price his customer may demand.

We have the BEST—car for the customer.
proposition for the Agent.

Write for Agency arrangements and descriptive matter, if you can't wait till the Shows.

New York and Chicago Shows, of course; (69th Regiment Armory, New York).

WAYNE AUTOMOBILE CO.

DETROIT, MICH.

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THE "Maxwell"

Perfectly Simple Simply Perfect

The Evolution of the Maxwell Doctrine–Maxwell Cars

The Doctrine:

1st. A cylinder of 5 inch bore with 5 inch stroke is ideal for a double opposed gasoline motor.

2nd. A double opposed motor, 5 inches by 5 inches, when properly made, develops, about **20 ACTUAL** horsepower.

3rd. To use four cylinders for motors of 20 or less horsepower is unnecessary because thereby the number of wearing parts is unnecessarily increased.

4th. **20 ACTUAL** horsepower, not momentum or fly-wheel horsepower, is enough for every requirement except excessive speed or extreme fashion. Therefore, a two cylinder, 5"x5" double opposed motor is the best, and **IT IS AS EVENLY BALANCED AS FOUR CYLINDER CONSTRUCTION,** is very much less complicated and much more reliable. It would take four 4"x4" cylinders to develop the same power as two 5"x5" cylinders, properly made.

5th. Four cylinder cars appeal largely to "Fad and Fancy" only; **TWO CYLINDER CARS PRODUCE RELIABLE SERVICE.**

The unprecedented successful record of the Maxwell cars during the season of 1905 prove the **WISDOM** of the above written **DOCTRINE.**

Reasons for the SUCCESS of the MAXWELL.

Common sense was the motive of its construction, not the impulse of "fad and fancy."

A 5"x5" horizontal double opposed motor for a touring car and a 4"x4" for a tourabout have been proved the *ideal* types for *service and reliability.*

MAXWELL HORSEPOWER is demonstrated by the **ACTUAL CONTINUAL TEST,** not by the flash system of testing which includes that resulting from the inertia of the fly-wheel. Therefore, **MAXWELL HORSEPOWER is ACTUAL HORSEPOWER.**

MAXWELL CARS ARE SPLENDIDLY MADE AS WELL AS PERFECTLY DESIGNED.

MAXWELL FEATURES in the PERFECT MAXWELL CAR.

MULTIPLE DISC CLUTCH, encased and running in oil, self-adjusting.

BEVEL GEAR DRIVE, combined with double universal joint avoiding filthy stretching chains.

THREE POINT SUSPENSION, resulting in the adaptability of the car to the unevenness of the road without straining the mechanism.

NATURAL CIRCULATION OF WATER, automatic in action, and eliminating all pump troubles.

METAL BODIES, eliminating the opening up of seams and the checking of bodies.

GREATEST SIMPLICITY, RELIABILITY AND ECONOMY, resulting in the lowest cost of upkeep, maintenance and operation.



Model H. 16-20 H. P. Touring Car,
Price, $1450.00.

It doesn't take a mechanic to adjust, to maintain and to run a MAXWELL car. MAXWELL CARS are sold under the *positive* guarantee that AS GOOD A CAR cannot be sold at a lower price.



Model L. 10 H. P. Tourabout.
Price, $780.00.

MAXWELL-BRISCOE MOTOR COMPANY,

CHICAGO. **Main Office, TARRYTOWN, N. Y.** **PAWTUCKET.**

Members American Motor Car Manufacturers' Association.

MAXWELL-BRISCOE, INC., New York, N. Y.
MAXWELL-BRISCOE McLEOD CO., Detroit, Mich.

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MORRISON TYLER MOTOR CO., Boston, Mass.
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MAXWELL-BRISCOE CHASE CO., Chicago, Ill.
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A New Pneumatic Tire

MADE BY

Firestone

THE RUBBER TIRE SPECIALISTS.

After exhaustive experiment and careful study of the requirements of pneumatic tires, we have invented a tire which has every possible good feature of the best, with practically all of their objectionable features eliminated.

Firestone pneumatic tires have withstood the most exacting tests during the past two years, and we can assert positively that we have more nearly reached the point of absolute perfection than has yet been attained by pneumatic tire makers.

Firestone Tires are sightly on the wheels. Good, practical common sense and accurate knowledge of the rigorous requirements of a good tire are apparent to the most casual observer. The fastening device is positive and will securely hold the tire under all conditions, and, whether inflated or deflated, there is no possibility of creeping or rim cutting. The most inexperienced person can easily remove the tire in two minutes and replace it in the same time, and he *cannot pinch the inner tube,* because in the Firestone construction it simply *cannot be pinched.*

For many years the name FIRESTONE has stood for the highest grade of excellence in solid tires. We know the tire business in every detail. We know we have a pneumatic tire which is without a peer—a tire which will receive and merit an extensive demand. To enable us to meet any demand which may be made, we have erected immense new buildings and equipped them solely for the manufacture of pneumatic tires.

OUR FACILITIES ARE ENORMOUS. OUR TIRES ARE RIGHT. Our successful business career has demonstrated our ability to accomplish what we undertake.

We want you to know more about Firestone Tires. Study them. Examine them as closely as you please, and we know you will be a Firestone customer.

Write for Illustrated Booklet.

FIRESTONE TIRE & RUBBER CO., Akron, O.

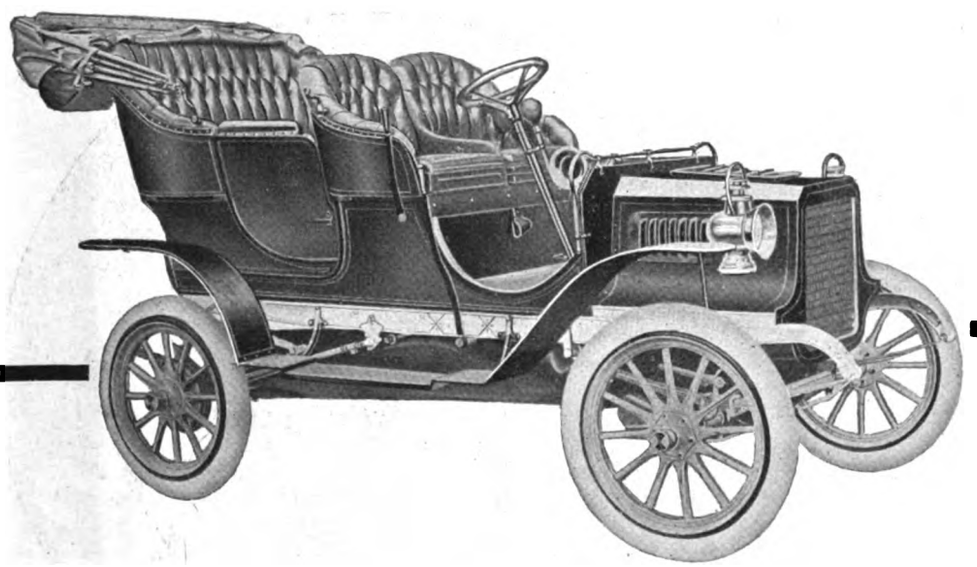
Branches: NEW YORK BOSTON PHILADELPHIA CHICAGO DETROIT ST. LOUIS

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The manufacturer who equips his cars with Veeder odometers reaps a crop of mileage enthusiasts, who, in the face of the odometer readings, will make no unreasonable demands for replacements or free repairs.

THE VEEDER MFG. CO., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Counters and Fine Castings.



REO

1906 Touring Car, 16 h. p., 1,600 pounds, 90 inch wheel base, 5 passengers, side-door detachable tonneau, speed 35 miles per hour, $1250.

The REO Face

No worry; no mind strain; no anxiety goes with a REO car.

The few simple operating devices are placed exactly ready to the hands and feet. Every movement is as natural as walking.

The feeling of surplus power under absolute command; the sense of strength, certainty and comfort; the assurance of getting there and back; these make the satisfied expression of the REO face.

REO 1906 RUNABOUT, 8 h. p., 900 pounds, 2 passengers, 25 miles per hour, $650. With folding seat to carry two extra passengers facing forward, $675.

BETTER GET IT.

We exhibit at the Old Show in the New Armory, January 13 to 20.

REO Motor Car Co., Sales Department, Lansing, Michigan.
R. E. Olds, Pres. R. M. Owen, Sales Mgr.

Agencies throughout the United States.

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THE SIMPLEST ENGINE IN THE WORLD.

THE TWO-CYCLE ELMORE

When you understand that the two cycle Elmore engine does away with 18 to 20 parts on each of the four cylinders, and absolutely eliminates all inlet and exhaust valves with their attendant mechanism, you'll agree with us, won't you, that this is the simplest engine in the world?

Do we need to point out that this also reduces the cost of operation and upkeep to the minimum and makes the Elmore the most economical as well as the simplest of engines in the world?

From whatever standpoint you examine the two-cycle Elmore, equally impressive and sensational features present themselves. The four cylinder car produces approximately as much power as would eight cylinders of the four-cycle type—produces it in a continuous and unbroken application that will carry the car indefinitely on the high speed under any and all road conditions.

Again, it is the most successful self-starting engine in the world. Again, you can cut out one, two or three cylinders at will, both spark and gasoline. With one cylinder cut out the difference is imperceptible except in speed; with two out, barely noticeable. Do you see the economy of this?

Again, you can throttle the Elmore engine on the high speed down to two miles an hour. Again, the Elmore will take a 16 per cent. grade on the high speed with approximately as much ease as it travels on the level road.

It starts with a smooth gliding motion that is delightful, and dips down and over uneven spots with a minimum of jolt or jar.

The four cylinder Elmore at $2500 and the two cylinder Elmore at $1500 are two cars whose manifold exclusive features demand your most serious consideration. Learn all the wonders of the two-cycle type by getting in touch with the nearest Elmore agent or by writing for our new descriptive catalogue and books of information.

THE ELMORE MFG. CO., 1104 Amanda St., Clyde, Ohio

Members Association of Licensed Automobile Manufacturers.

The Connecting Link Between Home and Office.

Isn't it significant that most men who can afford more than one motor car own a **POPE-WAVERLEY ELECTRIC?** The reason is simple. Without cranking, oiling, or soiling the gloves it starts right off in any weather. No water to freeze up, **always ready,** simple and safe. It is in a class by itself—an ideal about town carriage for the trip to and from the office, the theatre, the shopping tour, calling, or the spin to the suburbs or the country club.

We make Runabouts, Surreys, Stanhopes, Chelseas, Physicians' Road, Station and Delivery Wagons. Also trucks on specification.

WRITE FOR OUR COMPLETE CATALOGUE.

Be Sure The Name POPE Is On Your Automobile.

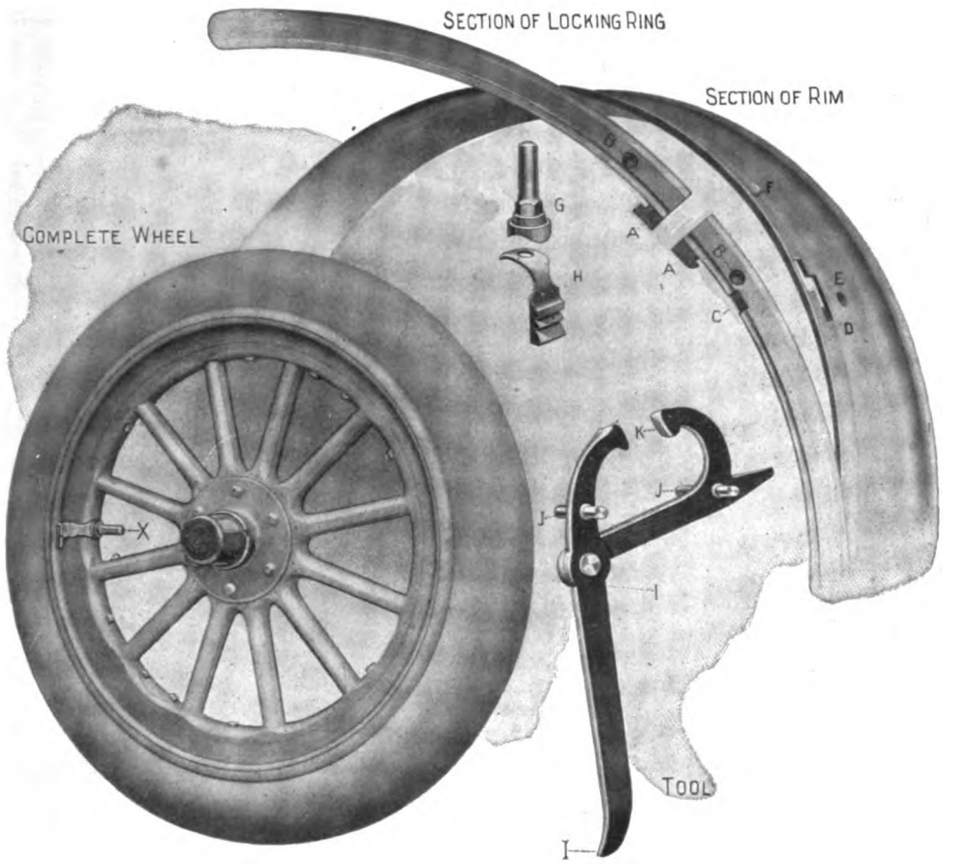
We exhibit in New York at Madison Square Garden only.

POPE MOTOR CAR CO.,
INDIANAPOLIS, IND.



NEW YORK CITY,	1733 Broadway.
BOSTON, MASS.,	223 Columbus Ave.
WASHINGTON, D. C.,	819–14th St., N. W.
SAN FRANCISCO, CAL.,	451 Mission St.

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YOUR TIRE OFF AND ON IN LESS THAN A MINUTE

Tells exactly what is accomplished by means of the

Goodrich Quick Detachable Construction

And a visit to our Exhibit at the New York Automobile Show, Madison Square Garden, will afford you the opportunity to see our claims proved.

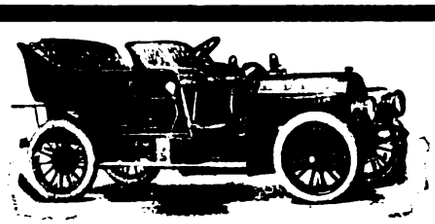
Perhaps you may wish to make dead sure and detach and attach the tire yourself. It is a pleasant little pastime with all the old time hard work features cut out. You will enjoy the experience and be impressed with the fact that the Goodrich Quick Detachable Tire and Rim is a great achievement in automobile tire building.

Space in Central Boxes directly over Madison Square entrance.

The B. F. Goodrich Co.

AKRON, OHIO.

NEW YORK, 66-68 Reade St and 1625 Broadway.
BUFFALO, 731 Main St.
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BOSTON, 161 Columbus Ave.
PHILADELPHIA, 909 Arch St.
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What Royal Tourist Owners Are Writin'.

"More pleased with Royal than any car I have ever owned. Have owned about 25, both foreign and American."

"Mine has run about 4,000 miles this season, and has had absolutely no repairs."

"Since June 22d I have toured about 6,000 miles, and during this time I have never once stopped on the road to make a single repair or adjustment."

"The Royal Tourist which I purchased of you has run about 6,000 miles, over hard country roads and sharp hills, and total cost of repairs will not exceed $3.00."

"I have run this car about 6,000 miles and have given it some hard usage. The expense for repairs has been $3.25."

"Am delighted with my Royal. Have run it nearly 2,000 miles, and have had no repairs."

"We have been over 7 500 miles, at this date, without a repair or replacement of any kind or description, except to tires."

Ask any of our Agents to show you reproduction of letters from which these remarks were taken.

ROYAL

THE ROYAL MOTOR CAR CO., Cleveland, Ohio.

AGENTS: C. A. DUERR & CO., New York, N. Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE & SUPPLY CO., Lim., Toronto, Ont.; MOTOR SHOP, Philadelphia, Pa.; WESTMINSTER AUTOMOBILE CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS-PIERCE & CO., Syracuse, N. Y.; THOMPSON SCHOEFFEL CO., Rochester, N. Y.; GUS BOYER, San Francisco, Cal.; Member A. L. A. M. Send for catalogue.

You're always sure of

A FINE FAT SPARK

with

SPLITDORF COILS



That's why everybody uses them.

C. F. SPLITDORF,
17-27 Vandewater Street.
New York.

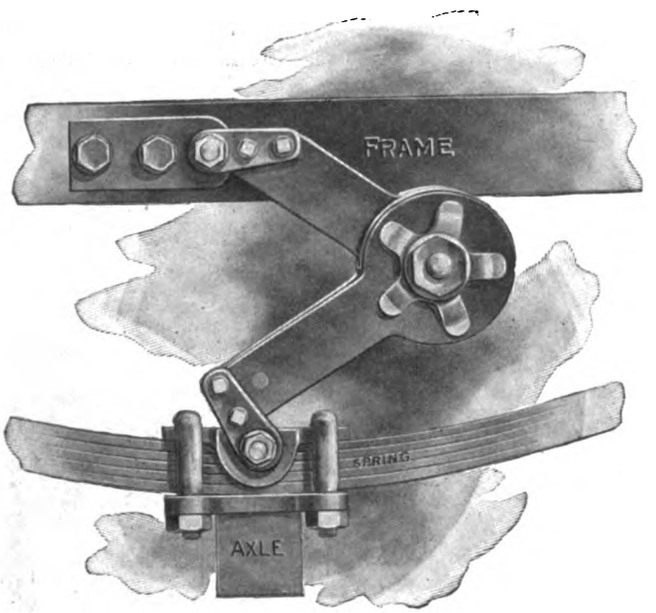
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IMPROVED

Truffault-Hartford

SHOCK ABSORBER.

AN AUTOMOBILE NECESSITY.



Insist that your car be equipped with the original Truffault-Hartford Shock Absorber.

Increases the speed.

Enables cars to proceed at highest speed over all obstructions.

Doubles the life of tires.

Prevents lost traction.

Absolutely prevents breaking of springs.

Makes cobble-stones and rough roads seem like asphalt.

New model absolutely self-adjusting. Requires no attention after application.

Adopted by the Pierce Great Arrow, Locomobile, Matheson, Richard-Brasier, Peugeot.

Don't be misled by devices made on principles which we have discarded.

CARS UNDER 1,500 LBS., $40.00. (Four Suspensions.)

CARS OVER 1,500 LBS., $60.00. (Four Suspensions.)

See our exhibit at the Madison Square Garden Automobile Show, Section 112, Elevated Platform.

HARTFORD SUSPENSION COMPANY,

We are the Sole American Agents for the Celebrated Gobron Brillie, the finest Automobile in the World.

E. V. Hartford, President.

67 VESTRY STREET, NEW YORK.

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Change Tires 30 Seconds Goodyear Universal Rim

SUPPOSING you were 25 miles from home, and your tire exploded. And you hadn't another with you. And when you stopped at the garage, the man said: "I'm sorry, but I haven't a single tire of that make."

Wouldn't it make you mad?

Of course it would, if you had an *ordinary* rim.

But if you had a Goodyear Universal Rim, you would smile and say: "Bring on any old tire, as long as it's a clincher my rim will take it." And in less than three minutes you would be enjoying the scenery once more.

Because it *isn't* an all-day job to take off and put on a tire when your car has Goodyear Universal Rims. Just jack up the wheel and in 30 seconds the old tire is off, and in another 30 seconds the new tire—ANY kind—is on. You need no tools but the hands—and are "fixed up" and on the road while the man with *ordinary* rims is hunting for his crowbars and levers.



Figure 1

You see the flange comes right off on Goodyear Universal Rims, like Fig. 1.

And then a 30-inch tire (for example) slides right on to the 30-inch rim like Fig. 2, as easy as you would put on yoor hat. On an ordinary rim you would have to pry that 30-inch tire over a 31-inch flange. You know what a profanity-inspiring job that is, and it doesn't do the tire any good, either.



Figure 2

Now this is all there is to taking off and putting on a tire when you have Goodyear Universal Rims. See how simple and easy it is.

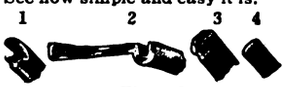


Figure 3

The rim is made up of four parts, like Fig. 3.

Nos. 1 and 3 are the removable flanges (rings), which can be adjusted to any clincher tire.

No. 2 is the base of the rim attached to the felloe of the wheel. It can be used without fitting on any standard wheel built for the standard clincher rims.

No. 4 is the locking ring, which holds the flanges in place.

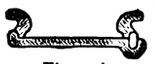


Figure 4

If you have decided to relieve yourself of all tire troubles and in consequence ride Goodyear Detachable Auto Tires, a section of the rim, when put together, would be like Fig. 4.

Or, if you ride an ordinary clincher tire, the rim section would look like Fig. 5.

The ring which holds the flanges in place is split at a point alongside the valve stem, like Fig. 6.



Figure 5

It can't be removed (and, of course, the tire can't come off) while the flange presses against it.

This flange is kept tight against the ring by a plate which slips over the valve stem, like Fig. 7.



Figure 6

When you wish to remove the tire, loosen the nut which holds the valve stem down, and push the stem up through the rim. This pushes up the plate and lets the flange ring slide inward, like Fig. 8.

Then lift out the locking-ring, slip off the flange, and pull off the tire.

Time, 30 seconds. No tools but the hands.



Figure 7



Figure 8

Those who are weary of tire troubles are specifying Goodyear Auto Tires on Universal Rims. This equipment *costs no more* than the ordinary kind, and multiplies the pleasures of motoring many times.

Ask for our "Good News Book" and find out all the good points of the Goodyear Auto Tire and Universal Rim. It's of vital interest to the Manufacturer, Dealer or User who is satisfied with nothing but *the best*.

THE GOODYEAR TIRE & RUBBER CO., Grove Street, Akron, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 596 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

We furnish ALL SIZES of Tires with BAILEY TREADS if desired

SIXTH NATIONAL

Automobile Show

AT

MADISON SQUARE GARDEN

NEW YORK

January 13th to 20th, 1906

JAMES C. YOUNG, Manager

SPECIAL NOTICE The trade admitted free up to 1 o'clock each day upon presentation of business card and registering name and address at the BUREAU OF INFORMATION

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To try an Acme is
to buy an Acme

Acme Motor Cars

prove on actual, practical road demonstration every essential feature of advanced and perfected automobile engineering to-day.

The Acme claims of superiority are based on these cardinal points:

Highest Power in Proportion to Weight
Highest Efficiency Ease of Control Beauty of Design
Strength and Compactness Smooth, Quiet Running

GUARANTEED FOR 365 DAYS

Acme Motor Cars are built entirely and wholly by the Acme Motor Car Company, which means there are no bought parts for assembling—**no unknown quantities.**

TYPE XIV—$2750. Of the same practical construction as type XV. Greatly improved in arrangement and larger body than last year. Three Speed Sliding Gear Transmission 30 Horse Power, 4 Cylinder Vertical Engine. Speeds up to 50 miles an hour. Demonstration by appointment.

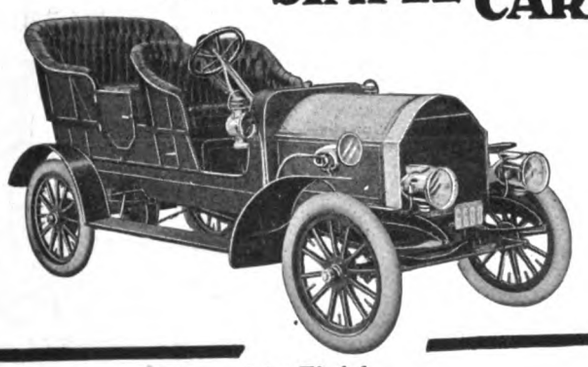
1906 Acme Cars—Specifications, Type XV

Price	$3500. Complete with two side Oil Lights, two Acetylene Head Lights and Generator, Tail Light and Horn.
Type	Touring Car.
Seating Capacity	7 persons.
Weight	2600 lbs.
Wheel Base	114 inches.
Tread	56 inches.
Clearance	10 inches.
Body	Double Side Entrance Tonneau, divided Front Seats, made of best seasoned Ash, Poplar and Basswood.
Seats	Soft Edged, Spring Cushioned Seats and Backs, width, front, 19 in., depth, 18 in., width, rear, 52 in., depth, 18 in.
Leather	Best Quality, Hand Buffed, Pebble Grained, French Finished.
Frame	Cold Rolled Nickel Steel, 180,000 lbs. tensile strength.
Axles	Front Nickel Steel, drop forged, "I" Beam Spring Seats integral with Axle; rear 1½ in. square, Nickel Steel forged.
Engine	40 H. P. Vertical, 4 cylinder, mechanical valves.
Clutch	Multiple Disc, running in oil, self-contained, no end thrust on bearings.
Transmission	Practically indestructible, Selective Sliding Gear, direct drive on 3rd speed.
Speeds	4 speeds forward and one reverse on one lever.
Gears	Chrome Nickel Steel, oil tempered, 212,000 lbs. tensile strength.
Bearings	Annular Ball, full type non-adjusting, Lemoine pattern.
Sprag	Internal Rachet in Sprocket of eacn Wheel.
Bolts and Nuts	All Bolts and Nuts throughout car, case hardened, and locked with Spring Lock Washers and Cotter Pins.
Gearing	Speed up to 50 miles an hour.

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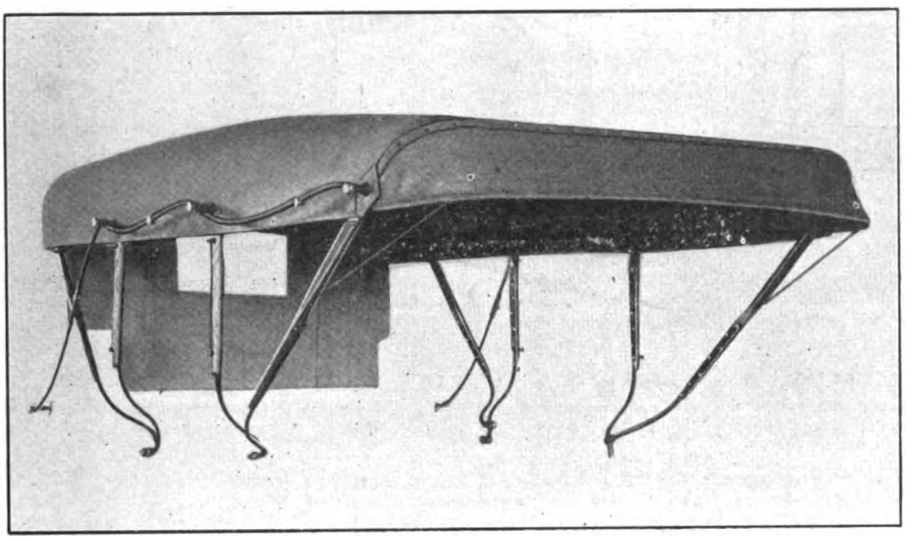
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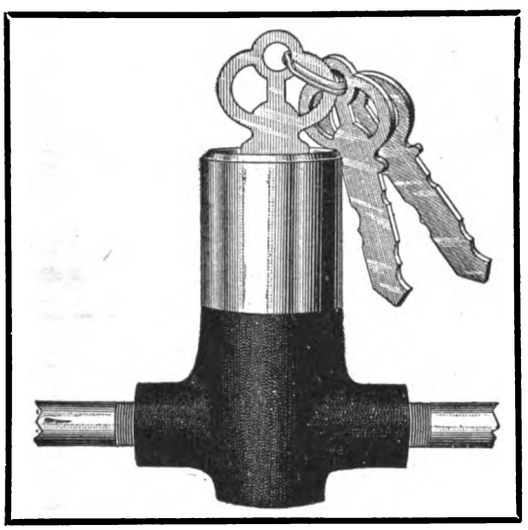
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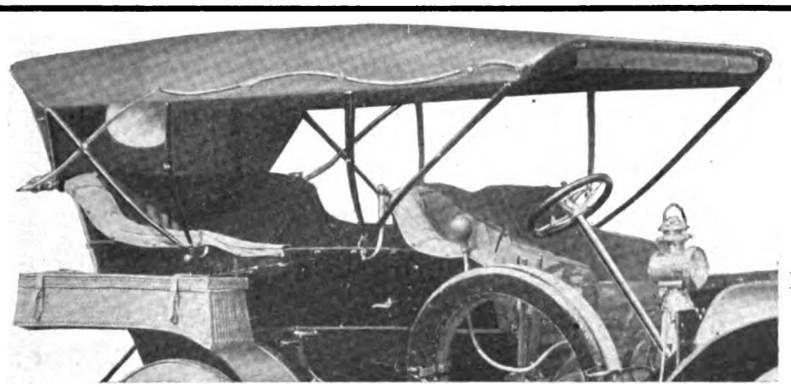
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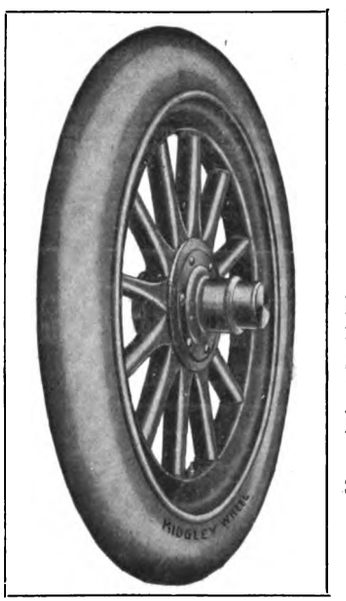
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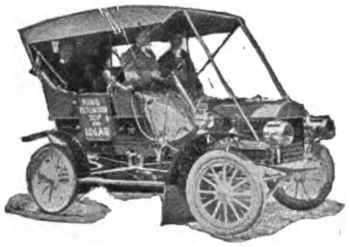
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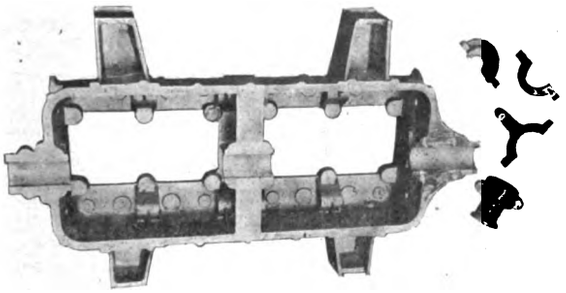


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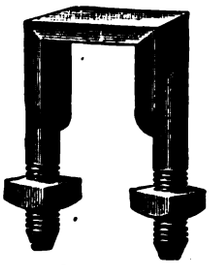
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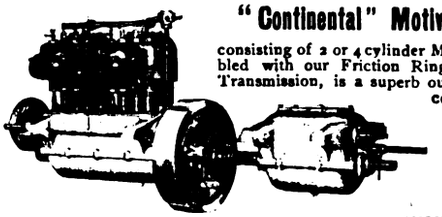
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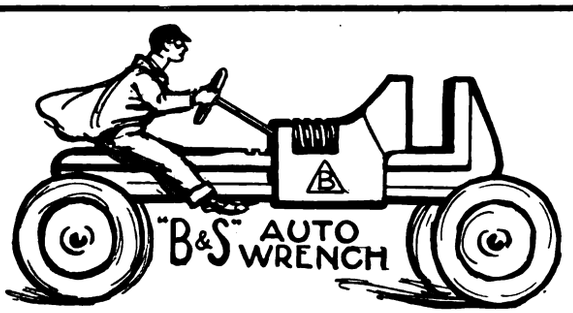
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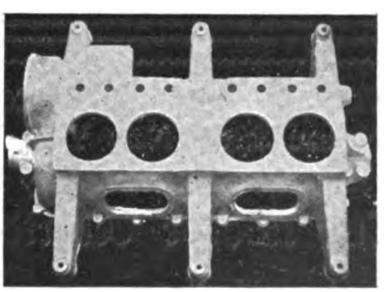
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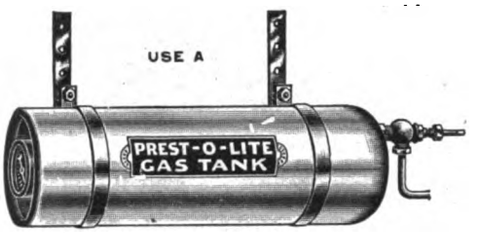
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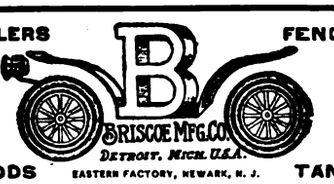
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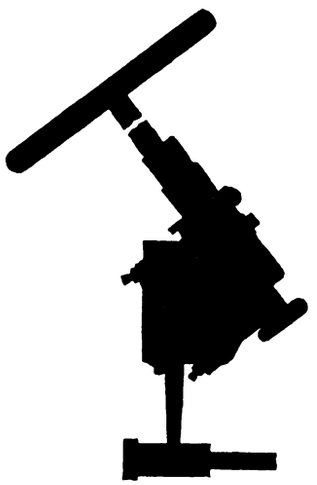
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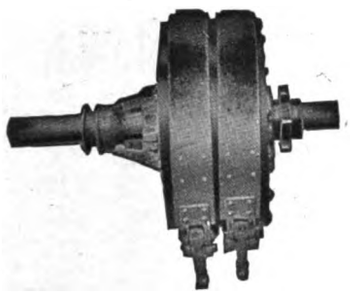
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INDIVIDUAL CLUTCH.
Two Speeds and Reverse.



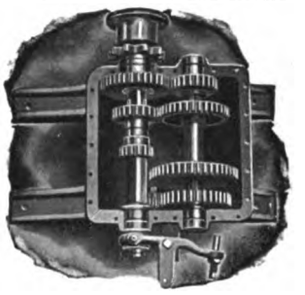
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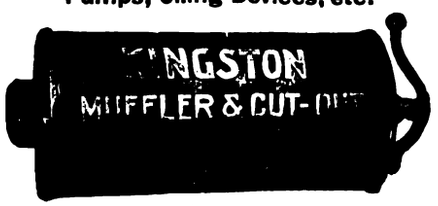
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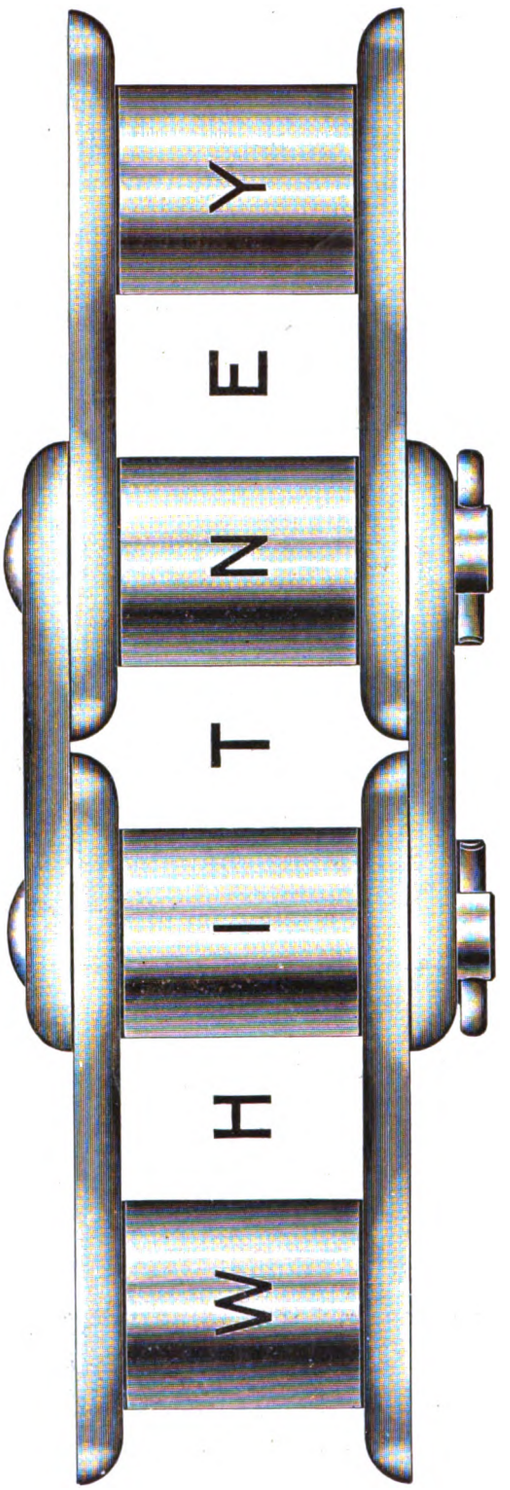
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Thousands of Chains have been damaged by interferences and unfavorable conditions.

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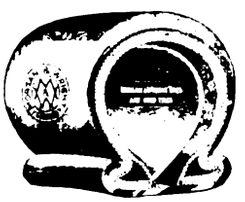
Are your sprockets in line?

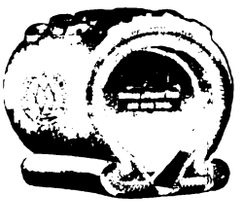
As a manufacturer do you inspect every sprocket by comparing it with a correct model or do you accept anything so long as it has the right number of teeth?

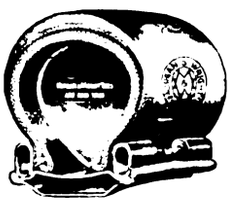
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These Tires Have Met THE AUTOMOBILIST'S Idea of What a Really GOOD Tire Should Be.

They have commanded popular favor THROUGH SHEER FORCE OF MERIT.

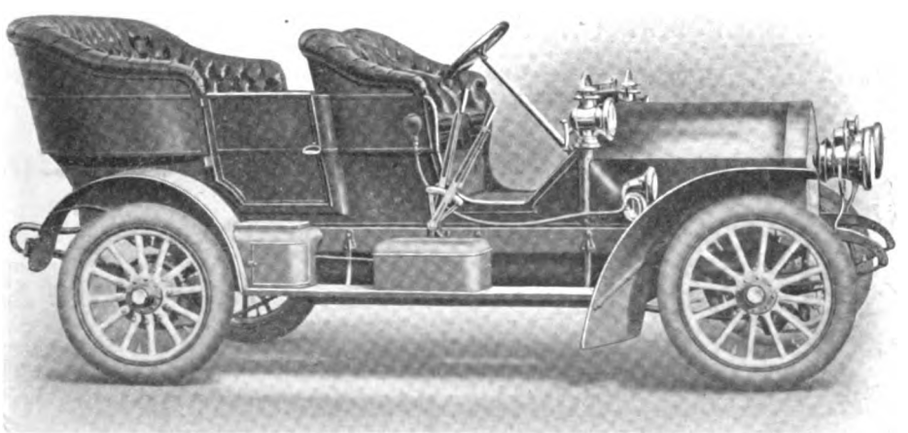
They have earned—and will occupy—a BIG place in the 1906 auto tire business.

☞We invite the most thorough and candid investigation on the part of every tire user who believes that he has a right to expect a full dollar's worth of tire SERVICE in return for every dollar of cost.

NEW YORK SHOW SPACES,
Madison Square Garden, No. 83. 69th Regiment Armory, No. 41.

MORGAN & WRIGHT, CHICAGO.

NEW YORK Uptown—214 W. 47th St.
" " Downtown—17 Warren St.
SYRACUSE—212-214 S. Clinton St.
BOSTON—228 Columbus Ave.
PHILADELPHIA—Cor. Broad and Vine Sts
CLEVELAND—347 Huron St.
DAYTON—417 E. 5th St.
DETROIT—265 Jefferson Ave.
MINNEAPOLIS—717-719 Hennepin Ave.
ATLANTA—35 Edgewood Ave.
ST. LOUIS—538 Vandeventer St.
DENVER—1562 Broadway.
SAN FRANCISCO—1067 Mission St.
LOS ANGELES—940 S. Main St.
PORTAND—86 6th St.



4-CYLINDER MODEL G WATERLESS

KNOX

The pioneer builders of air-cooled cars. Present model G the most satisfactorily cooled automobile ever made. It is also

THE HIGHEST OF ALL HIGH GRADE CARS

35-40 H. P. Price, $4,000.00

Exceptionally roomy and luxurious; ample power and speed maintained under all conditions of weather and roads. Fitted with either tonneau or limousine bodies.

We shall exhibit at Madison Square Garden only in New York, January 13th to 20th, our full line of four-cylinder and two-cylinder pleasure cars, also a large line of gasoline commercial cars.

KNOX AUTOMOBILE CO. - - SPRINGFIELD, MASS.

Members of the Association of Licensed Automobile Manufacturers.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

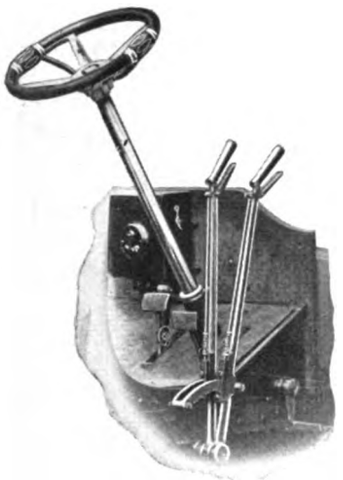
The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who are licensed to manufacture or sell under the G & J Patents:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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Autocar Control

is simple, easy and absolutely reliable. It is far in advance of any other motor-car control yet devised, and is, in itself, of such importance and advantage as to make The Autocar the most desirable car on the market—American or foreign.

Throttle and spark are accurately and positively governed by the grips in steering wheel: An exclusive Autocar idea that appeals to novice and expert alike; and particularly to the man who desires to drive his own car.

The Autocar driver is free from complicated apparatus. Guidance and speed-regulation are simultaneous; and the control of the car becomes as natural and automatic as walking.

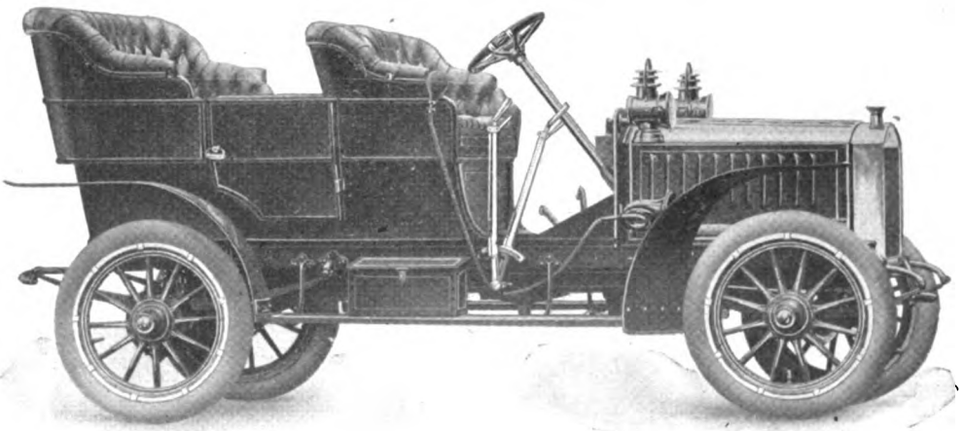
The clutch is operated by a foot-pedal. Another foot-pedal controls the brake.

The gear shift lever, outside car-body, gives ready control of speed changes. The emergency brake is controlled by a second outside lever, interlocked with the clutch; applying the brake throws out the clutch, rendering the motor powerless to move the car.

The Autocars are exhibited in New York only at Madison Square Garden

The Autocar

TWO MODELS FOR 1906

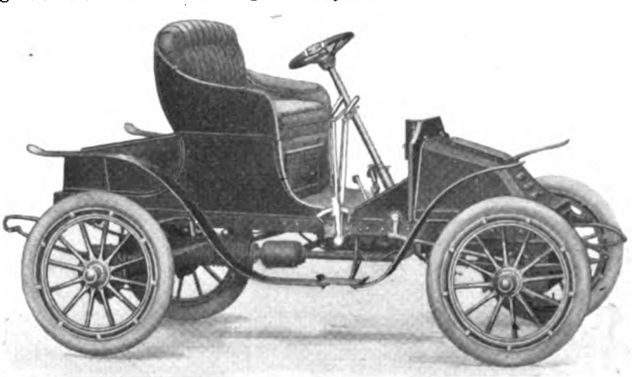


TYPE XII. Five Passengers. $2,600.

Four cylinder vertical motor—24 James Watt horse power (26 h. p. on test)

Shaft drive. Sliding-gear transmission. Three speeds and reverse. 100-inch wheel base. 56-inch tread. 32"x4" Fisk "Heavy Car" type tires. Internal and external hub brakes—no brake on driving shaft. Holley vaporizer, Autocar type, at side of crank case. Coil radiator. Crank shaft bearings oiled directly. Speed 40 miles. Climbs grades up to 15% on direct drive.

Big, broad and luxurious—extraordinary in road-covering and hill-climbing ability—unexampled reliability—with exclusive simplicity of control, and moderate in price. The logical selection of the greatest number of touring car-buyers.



TYPE X. Two Passengers. $1,000.

Two horizontal-opposed cylinders, in front—12 James Watt horse power (13 h. p. on test)

Shaft drive. Sliding gear transmission. Three speeds and reverse. 76-inch wheel base. 54-inch tread. 28"x3" Fisk "Heavy-car" type tires. Mechanical (gear-driven) oiler on crank case. Holley vaporizer at right front of motor. Speed 35 to 40 miles. Climbs grades up to 15% on direct drive.

The best Runabout; ***made better*** and **standardized.** Higher-powered and changed from left-hand lever steer to right-hand wheel-steer with characteristic Autocar Control.

WRITE FOR CATALOGUE.

THE AUTOCAR CO., Ardmore, Pa.

Members Association of Licensed Automobile Manufacturers.

Reliability

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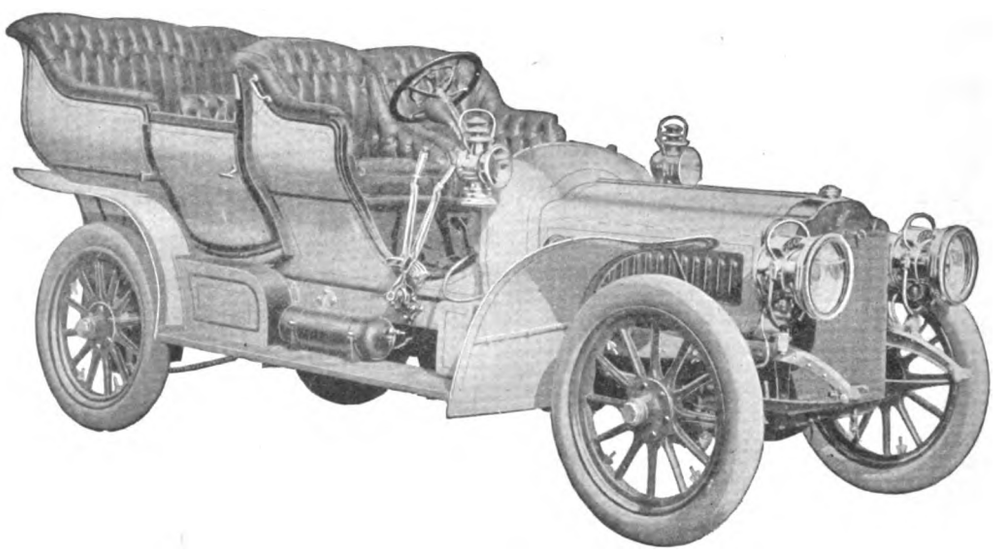
The Largest Factory in the World

Devoted to the Manufacture of High Powered Automobiles

now in course of construction will be taxed to the full limit of its capacity to meet the extraordinary demand for the magnificent

50 H. P.

THOMAS FLYER



The story is the same in every big city in the country—the complete supremacy of this wonderful car conceded on every hand and agents begging for a larger allotment. There is nothing accidental about this extraordinary enthusiasm. It is the logical outcome of years of painstaking experience and preparation, culminating in a car which represents the most costly and the most perfect possible construction throughout. The 1906 Thomas marks the arrival of the long-expected American car which will wrest supremacy from the finest foreign product. Just one indication of its marvelous efficiency is the fact that

Every Stock Thomas is Guaranteed to Show Sixty miles an hour before leaving the Factory.

We are merely consulting your own interests when we advise you to get in touch with the nearest Thomas representative at the earliest possible moment.

THE E. R. THOMAS MOTOR CO.,

1416 Niagara Street, **BUFFALO, N. Y.**

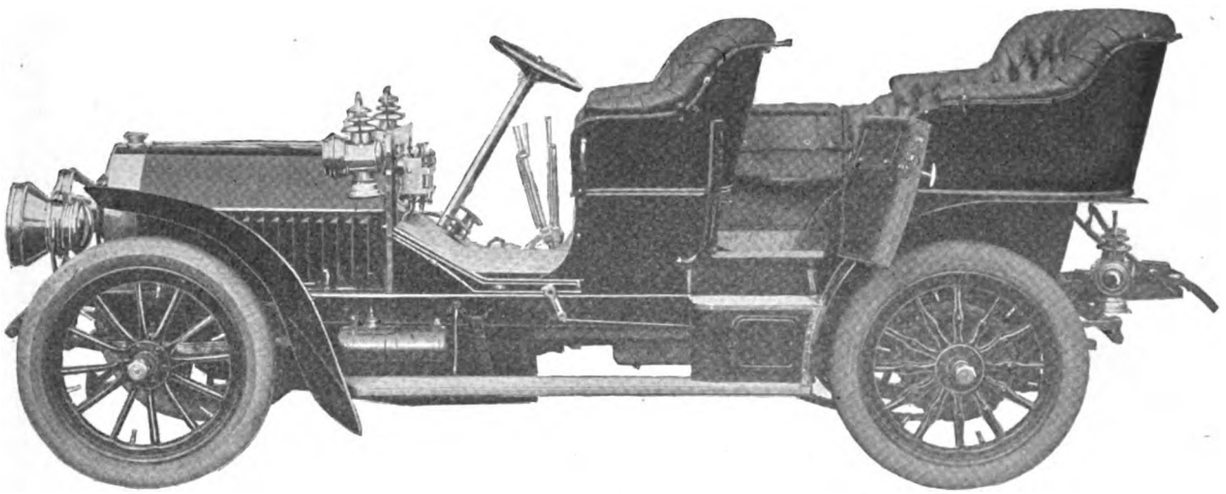
Members Association of Licensed Automobile Manufacturers.

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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. **30-35 H. P., $5,000.**



TYPE H. LOCOMOBILE 30-35 H. P. $5,000.

Top and Luggage Carrier extra.

SPECIFICATIONS OF 1906 MODELS.

Type "E" Locomobile—15-20 H. P.

PRICE, $3,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5; extra wide doors; fitted with top irons; color and striping optional.
MOTOR, 4-cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 32 inch x 4 inch on all four wheels.
WHEEL BASE, 93 inches.
CONTROL, spark and gas levers on steering wheel.

Type "H" Locomobile—30-35 H. P.

PRICE, $5,000, ready for touring.
EQUIPMENT, 5 brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY, double side entrance seating 5 to 7; fitted with top irons; extra wide doors; color and striping optional.
MOTOR, 4 cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS, hardened forgings; all cams integral.
CRANK SHAFT, machined from one solid forging.
LUBRICATOR, large mechanical lubricator.
CARBURETER, automatic, with balanced throttle valve.
GOVERNOR, centrifugal type, prompt and positive in action.
IGNITION, make-and-break.
MAGNETO, low tension, our own design and manufacture.
ALUMINUM PAN, is placed underneath the machinery.
FRONT FENDERS, have inner wings extending to bonnet.
CLUTCH, cone type with ample surface.
TRANSMISSION, 3 forward speeds and reverse.
DRIVE, double side chains.
DOUBLE UNIVERSAL JOINT, between clutch and transmission.
RUNNING BRAKE, double acting type, metal to metal.
EMERGENCY BRAKES, internal expansion, metal to metal.
COMBINED BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES, "I" section hand-welded axles.
RUNNING BOARDS, rubber covered and brass bound.
TIRES, 34 inches x 4½ inches on all four wheels.
WHEEL BASE, 106 inches.
CONTROL, spark and gas levers on steering wheel.

For 12c in stamps we will mail 12 souvenir postal cards showing various views of the LOCOMOBILE in the Vanderbilt Cup Race, making the best showing of any American car in any international contest. For 10c in stamps we will mail a five-color poster showing the LOCOMOBILE finishing the race. Printed matter of 1906 cars on application.

The *Locomobile* Company of America, Bridgeport, Conn.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 249 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

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QUEEN
AUTOMOBILES
FOR 1906

3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P.

Price, $2,000.

SPECIFICATIONS

Drive.	Shaft, bevel gear.
Frame.	Pressed Steel.
Wheels.	32x4
Wheel Base.	101 incnes.
Transmission.	Sliding gear.
Front Axle.	Solid-Forged.
Ground Parts.	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
Equipment.	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

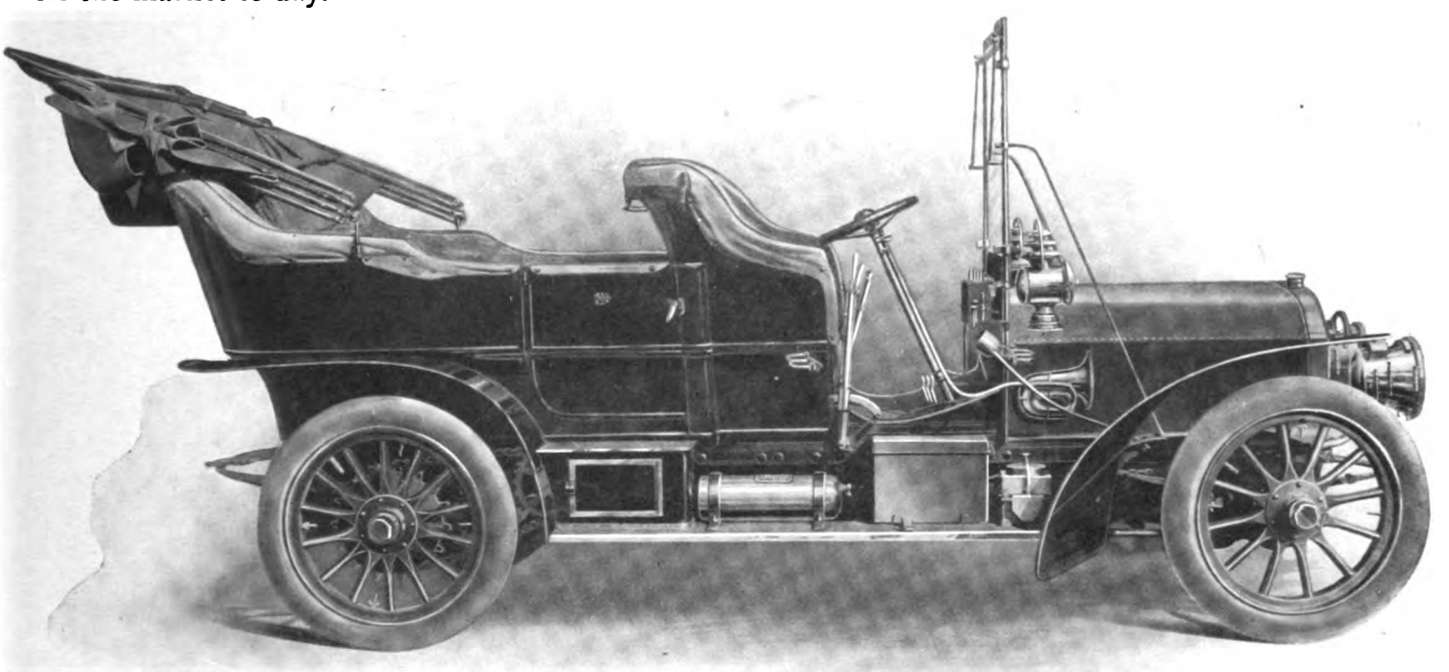
C. H. BLOMSTROM MOTOR CO

DETROIT, MICH.

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We will Exhibit in Madison Square Garden Automobile Show January 13-20. Space No. 39.

The "Matheson" touring car is designed to compete principally with the very finest and highest priced cars of foreign make. Its exceptional qualities and superior operation can only be fully appreciated by ***actual comparison*** with others, ***part for part,*** and by ***actual long-distance road demonstration.*** It is, without any exception, far and away the most thoroughly mechanical, the strongest built, the most powerful, the fastest, the handsomest and the most completely equipped car on the market to-day.



CHARACTERISTIC FEATURES:

Self-starting from the seat
Make-and-break ignition with magneto.
Four-cylinder vertical engine.
All valves in the head mechanically operated.
Valves never require regrinding.
All valve-actuating mechanism, on top of engine quickly accessible.
Absence of Vibration.
Noiseless in operation.
Automatic, wide-range, multiple-spray carburetor; will stay adjusted and vaporize any grade of gasolene.
Automatic speed control by governor.
Automatic lubrication, multiple, positive, force feed.
Clutch, multiple-disc, metal to metal. Will run thousands of miles without adjusting.
Sliding-gear transmission, chrome nickel steel.
Roller bearings on all wheels.
Double Chain drive.
Extra large bearings throughout, insuring long life.
Hess-Bright (imported) ball bearings on transmission shafts, differential shafts, steering knuckles, and in clutch actuating mechanism.

Four especially powerful brakes; two are water-cooled.
Hill-pawl prevents car backing down grade.
Irreversible steering gear.
Axles, special nickel-steel forgings; I-beam pattern.
Nickel-steel frame, cold rolled pressed.
Flexible reciprocating rotary spring suspension, eliminating all torsional strains on front and rear springs.
Long half-elliptic springs front and rear.
Radiator, honeycomb type.
Gasolene tank, capacity 20 gallons.
Metal pan underneath car.
Tires, 36 x 4 inches front; 36 x 4½ inches rear.
Wheel base, 40-45 H. P., 112 inches. 60-65 H. P., 118 inches.
Side-entrance aluminum bodies, superbly finished; the unparalleled production of J. M. Quinby & Co. and Moore-Munger Co., luxuriously upholstered.
Weight, 40-45 H. P., 2,960 lbs.; 60-65 H. P., 5,160 lbs.
Speed guaranteed: 40-45 H. P., 60 miles per hour. 60-65 H. P., 70 miles per hour. Geared for greater speed, if desired.

"America's Finest Motor Car."

"Matheson"

40-45 H. P. $6 000. 60-65 H. P. $7,500.
With Complete Equipment Below.

Our Complete Equipment Consists of

Cape-Carte top.
Storm curtains,
Standing glass front,
Detachable folding seats, with lazy backs,
Foot cushions,
Mats front and rear,
Large leather wallet,

Toilet set of comb, brush, mirror, whisk broom and soap case,
Tool and accessory lock drawers,
Folding baggage rack,
Tire irons for carrying extra tires at side of car,
Tire covers, waterproof,
Coat rail,

Truffault-Hartford shock absorbers,
Acetylene generator or gas tank,
Acetylene headlights, oil side lamps, tail lamp,
Large dragon horn,
Chime horn,
Gasolene gauge,
Grademeter,

Reserve tank lubricating oil,
Jones Odometer-Speedometer,
Water-gauge,
Dashboard 8-day clock
Monogram on doors,
Complete set tools and tire repair outfit,
Extra parts, etc.

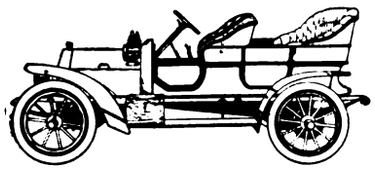
Complete catalogue giving full details mailed on request.

MATHESON MOTOR CAR CO., - - - WILKES-BARRE, PENN.
Member Association Licensed Automobile Manufacturers. (Formerly Holyoke, Mass.)

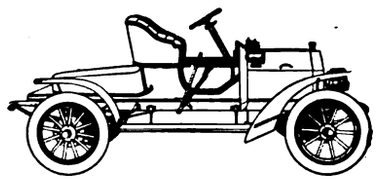
N. B.—Our new factory is one of the largest and most modern automobile plants in the world.

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OLDSMOBILE



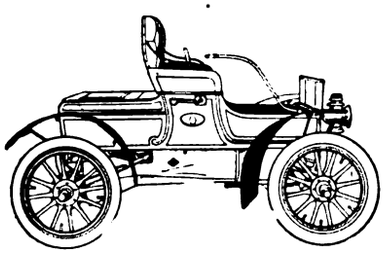
Oldsmobile Model S.
Price $2250.



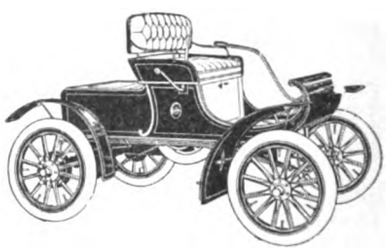
Oldsmobile Model L.
Price $1250.

You are cordially invited to inspect our exhibit at Madison Square Garden, January 13-20.

If you can't come, write today for new book on Model S—just off the press.



Oldsmobile Model B.
Straight Dash, Price $650.



Oldsmobile Model B.
Curved Dash, Price $650.

OLDS MOTOR WORKS, Lansing, Mich. U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K7 Model L.... Traffic Cars....

Name .....

Address .....

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name .....

Address .....

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K7

Name .....

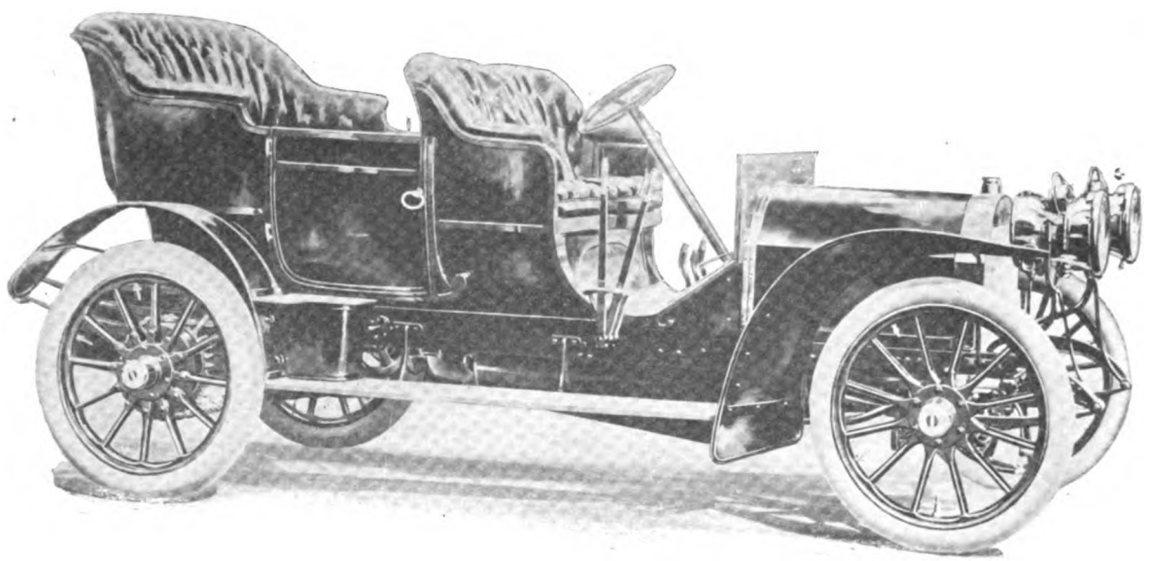
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AMERICAN LOCOMOTIVE MOTOR CAR

BERLIET

TOURJOURS PRÊT.



Sizes 24-30 and 40-45 Horsepower.
Built under BERLIET License.

Recognized Leading Foreign Car. Selected by our Engineers to reproduce in this country.
Using French materials and methods

SEE OUR EXHIBIT AT THE SHOW,

69th Regiment Armory, 26th Street and Lexington Ave.

AMERICAN LOCOMOTIVE AUTOMOBILE COMPANY

1776 Broadway, New York.

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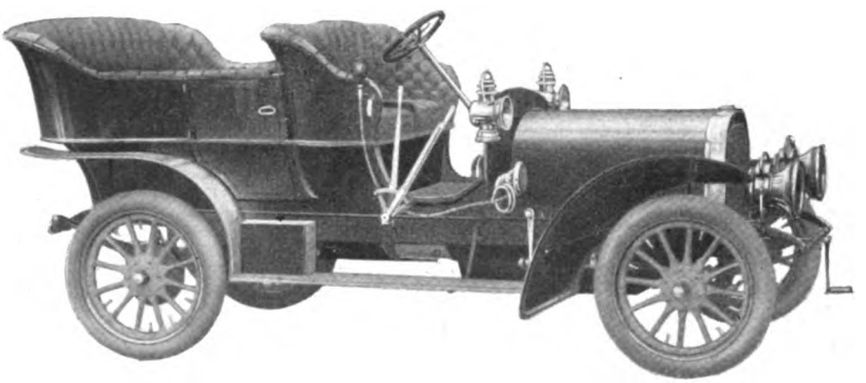
THE BEST SELLING PROPOSITION IN AMERICA

Write for Terms of Agency and for Catalogue telling the Story

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HAYNES

The Car of Many Exclusive Features



The Haynes has many exclusive features that assure for it a wonderfully low maintenance and up-keep expense.

In a 6,000 mile trip, made in early winter, from Kokomo, Ind., to New York and Boston via Albany, returning over the Allegheny Mountains by the National Road, the repair expense was but $1.50.

Roller-bearings throughout, make the loss of power between the motors and rear tires less than 10 per cent, and account for the ease with which the car went up the longest and steepest grades in crossing the mountains.

The Haynes exclusively has roller-bearing engines; a Master Clutch with no wearable surfaces, which takes hold without jerking; a transmission that positively prevents burring and stripping of gears; and a roller pinion and rear axle that overcome every objection to shaft driven cars.

Other exclusive Haynes features are given in our new catalogue. For prompt attention address Desk 66.

Model "R" Four-Cylinder Touring Car.

Vertical roller-bearing engines. Cylinders cast separately, 5⅛x6 inches, 50 H. P. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master Clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller bearings throughout. 108-inch wheel base, 54-inch tonneau, seating five people. Four to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, $3,500, f. o. b. Kokomo. Full equipment.

Mod l "O' Four-Cylinder Touring Car.

Cylinders cast in pairs 4¼x5 in., 28 to 30 H. P. Transmission, cooling system, lubrication, master clutch, shaft drive, universal joints, sprocket, roller pinion and roller-bearings and body same as on Model "R." 97-inch wheel base. 4-inch tires. Tonneau seating three persons. Four to 40 miles an hour on high speed. Price, $2,250, f. o. b. Kokomo. Full equipment.

"The Car The Repairman Seldom Sees"

HAYNES AUTOMOBILE COMPANY

Chicago, 1421 Michigan Ave. **KOKOMO, IND.** **New York, 1751 Broadway**

Members A. L. A. M.

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Modern Commercial Cars

(Gasoline and Electric).

Trucks, Delivery Wagons, Omnibuses and Sight-Seeing Cars

Capacities: 1 to 5 Tons. 9 to 30 Passengers.

High Powered, 4-cylinder, Vertical Motor



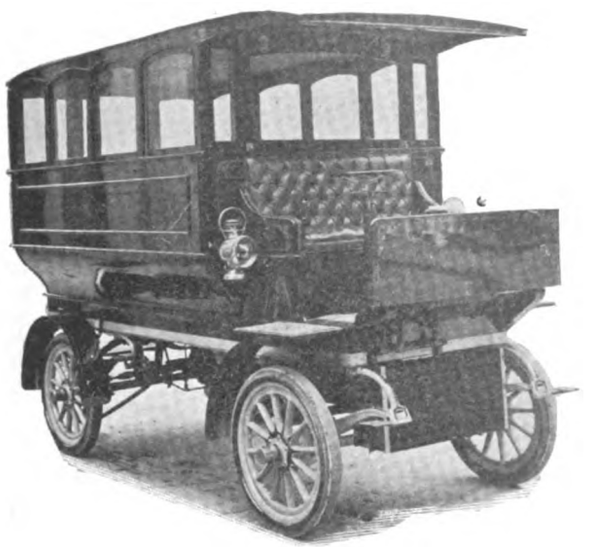
Sliding Gear, Transmission, 3 speeds and Reverse.

3-TON GASOLINE TRUCK.

Built for Business and Pleasure.

☞ Our 4-cylinder Sixteen Passenger Wagonette will be placed in service between the Armory and Madison Square Garden for the convenience of visiting agents and interested parties, absolutely free.

Powerful, Quiet Running.



Comfortable, Luxurient.

12-PASSENGER GASOLINE WAGONETTE.

Look for these 1906 models at our exhibit at the Armory Show. They exemplify the highest type of modern commercial car construction.

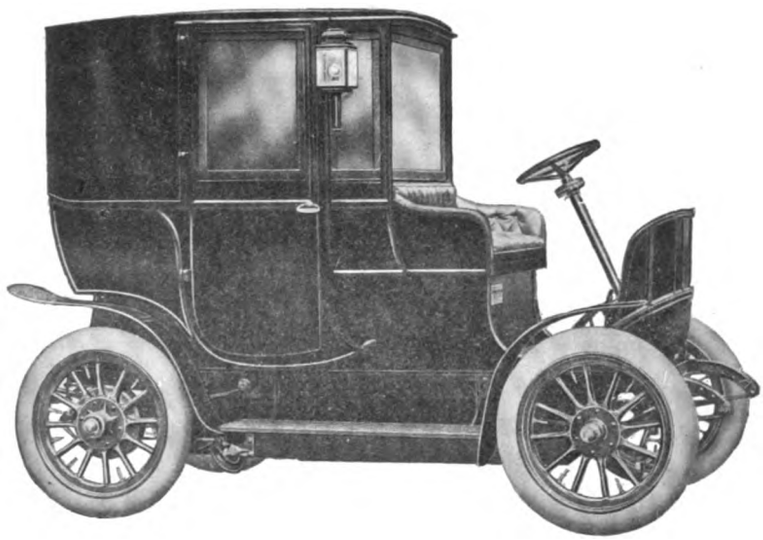
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THE AUTO CAR EQUIPMENT COMPANY, Mfrs., - Buffalo, N. Y.

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Columbia

New Electric Carriages



COLUMBIA ELECTRIC BROUGHAM, MARK LXVIII.

IN New York, London, Paris and other large cities Columbia Electric Broughams, Landaulets and Hansoms are the favorite vehicles of people who demand and have the best of everything.

These carriages are made for private use only and no others compare with them for motive efficiency, exclusiveness of design, perfection of detail and finish, and luxury of furnishing. For town use they provide the ideal motor service.

At the AUTOMOBILE SHOW, MADISON SQUARE GARDEN, we are exhibiting a complete line of these superb carriages—also the lighter COLUMBIA ELECTRICS, VICTORIA-PHAETON and RUNABOUTS which, in their class, are no less distinctive in point of exclusive design, and equal superiority.

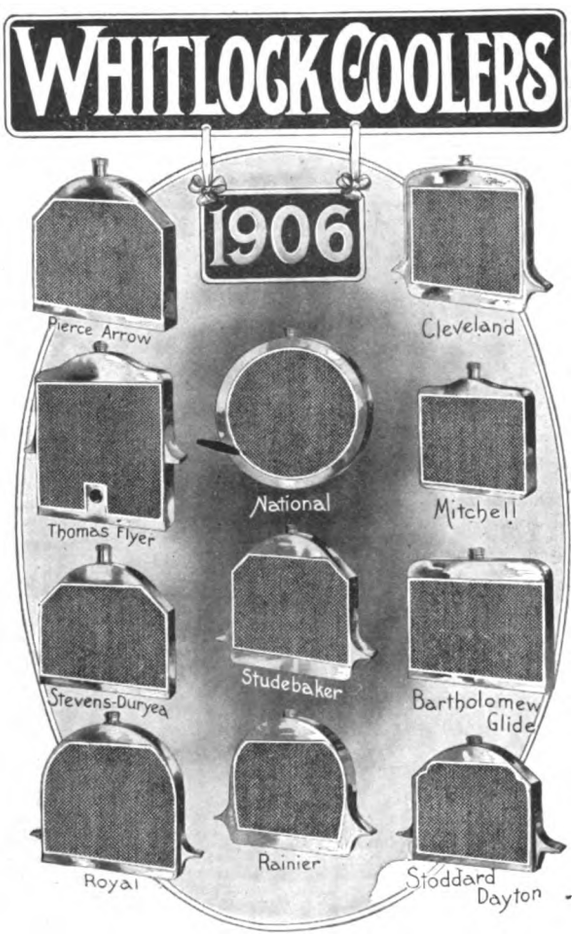
Catalogues of all Columbias, Electric and Gasolene, on request.

ELECTRIC VEHICLE CO., - - Hartford, Conn.

NEW YORK BRANCH: 134-136-138 West 39th St.
CHICAGO BRANCH: 1332-1334 Michigan Avenue.
BOSTON: Columbia Motor Vehicle Co., 74-76-78 Stanhope St.
PHILADELPHIA: Pennsylvania Electric Vehicle Co., 250 N. Broad St.
WASHINGTON: Washington E. V. Transportation Co., 15th St. and Ohio Avenue.
PARIS: A. Bianchi, 5 Rue de Berri.

Member Association of Licensed Auto Mfrs.

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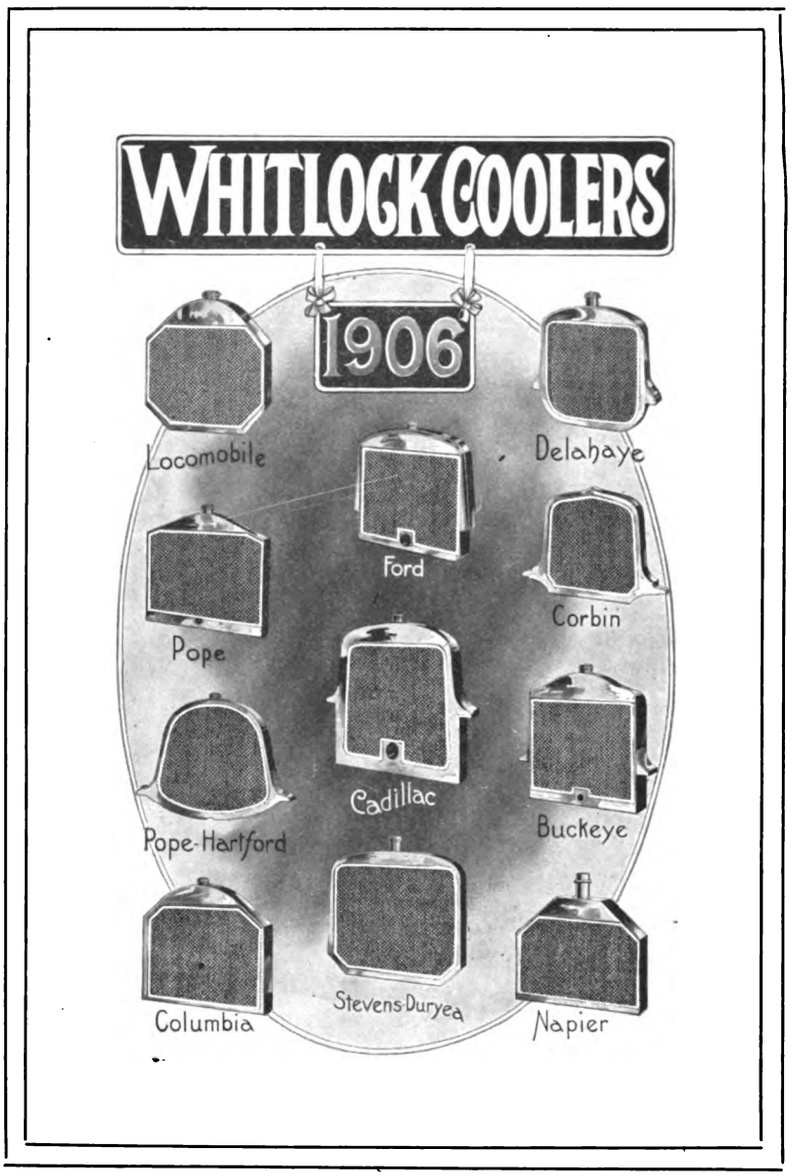
MANUFACTURED BY

THE WHITLOCK COIL PIPE CO.

Engineers, Sheet Metal Workers,
Brass Founders and Finishers.

Hartford, Conn., U. S. A.

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THE WHITLOCK COIL PIPE CO.

Engineers, Sheet Metal Workers,
Brass Founders and Finishers.

Hartford, Conn., U. S. A.

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SOLAR LAMPS

THEY CUT LIKE A KNIFE THROUGH THE GLOOM AND DARKNESS

EVERY MAN WHO DRIVES AT NIGHT MUST HAVE A GOOD CAR AND A BETTER LIGHT

LET THE SOLAR LIGHT YOUR WAY



THAT'S THE SOLAR

GET OUR BOOKLET OR ASK YOUR SUPPLY MAN

BADGER BRASS MFG. CO.
KENOSHA, WIS.

NEW YORK OFFICE, 11 WARREN ST.

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MEMBER

39%

of the Automobile Manufacturers showing at the "Garden" and a large percentage of those showing at the "Armory", using cylinders with integrally cast waterjackets, have their

Cylinder Castings

made by

THE MANUFACTURERS FOUNDRY CO.,

Waterbury, Conn.

CYLINDER CASTINGS.

Send patterns and we will submit sample castings and quote prices.

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THE "Maxwell"

Perfectly Simple
Simply Perfect

Notice to Automobile Buyers

YOU OWE it to yourself TO MAKE a careful investigation BEFORE making your selection. Too many people buy motor cars nowadays WITHOUT SUFFICIENT scrutiny, and ARE GUIDED by a too implicit confidence in the advertised claims, many of which ARE NOT borne out by past records or the facts.

Paint and varnish are put on by one manufacturer about as well as by another, but paint and varnish are but a SMALL PART of an automobile. Some motor cars resemble, metaphorically speaking, the Isle of Cyprus, "Fair without, but filled within by dead men's bones."

The POWER of an explosive motor is in direct ratio to the size of its cylinders. Cylinders with a 5 inch stroke and a 5 inch bore. when properly constructed, DEVELOP about 10 ACTUAL horse power. THIS IS ACTUAL HORSE POWER, not advertised horse power.

The cubical measurements of a 4x4 inch cylinder are about half of those of a 5x5, and consequently it will develop but half the power. By using four 4x4 inch cylinders, therefore, NO EXTRA horse power results thereby, yet there is in this amplification of parts ALWAYS a likelihood of disorder.

Perhaps you are not up in the manner of measuring the horse power of a gasoline motor. There is NO GREATER FAKE in any industry than the horse power fake in automobile advertising.

The manner actually used for ascertaining horse power it may be well to explain. A brake is constructed of a band with a fibre or wood lining. This band partially surrounds the periphery of the flywheel. To one end of this band is attached a lever. The other end is held to the floor or frame of the testing stand. A spring balance of the same form as is ordinarily used by butchers and grocers is fastened to a hook in the floor or frame out towards the end of the lever. The revolutions of the flywheel exert a pulling pressure through the band and the lever on to the spring balance. The number of pounds pulled on the spring is then computed according to an accepted formula into horse power. The principle of the formula is so many feet of travel of the rim of the flywheel to so many pounds pull on the spring, figuring the length of the lever, and the result is foot pounds, there being 33,000 foot pounds to 1 horse power.

Where the Fake Comes In

SOME manufacturers speed their motors up at a terrific rate, and then for A SECOND or a fraction of a second apply pressure on the brake band, thus throwing the inertia of the flywheel, IN ADDITION to the power of the motor, against the spring. This method, therefore, represents not only the pulling power of the flywheel, BUT, ALSO, the additional force necessary to reduce the momentum. You have often watched a butcher weigh meat. He will throw a pound on his spring balance, and before the hand has a chance to settle back into its true place he will collect pay for two pounds from his customer. This illustrates the wrong way.

THE ONLY TRUE AND PROPER WAY is that which is USED BY THIS COMPANY, which is to apply the test for HOURS at a time, providing means for keeping the brake band cool.

That is why the MAXWELL Tourabout and the "Gentleman's Speedster," though rated by us AT ONLY 10 HORSE POWER ACTUAL, is the EQUAL in results, hill-climbing and general road performance to many cars of several times its rated horse power.

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THE "Maxwell"

Perfectly Simple Simply Perfect

The Evolution of the Maxwell Doctrine—MAXWELL CARS

The Doctrine:

1st. A cylinder of 5 inch bore with 5 inch stroke is ideal for a double opposed gasoline motor.

2d. A double opposed motor, 5x5 inches, when properly made, develops about 20 ACTUAL horse power.

3d. To use four cylinders for motors of 20 or less horse power is unnecessary, because thereby the number of wearing parts is unnecessarily increased.

4th. 20 ACTUAL horse power, not momentum or flywheel horse power, is enough for every requirement except excessive speed or extreme fashion. Therefore, a two cylinder, 5x5 inch, double opposed motor is the best, and IT IS AS EVENLY BALANCED AS FOUR CYLINDER CONSTRUCTION, is very much less complicated, and much more reliable. It would take four 4x4 inch cylinders to develop the same power as two 5x5 inch cylinders properly made.

5th. Four cylinder cars appeal largely to "Fad and Fancy" only; TWO CYLINDER CARS PRODUCE RELIABLE SERVICE.

The unprecedented successful record of the Maxwell cars during the season of 1905 prove the WISDOM of the above written DOCTRINE.

Reasons for the SUCCESS of the MAXWELL:

Common Sense was the motive of its construction, not the impulse of "fad and fancy."

A 5x5 inch horizontal double opposed motor for a touring car, and a 4x4 inch for a tourabout, have been proved the ideal types for service and reliability.

MAXWELL HORSE POWER is demonstrated by the ACTUAL CONTINUAL TEST, not by the flash system of testing, which includes that resulting from the inertia of the flywheel. Therefore, MAXWELL HORSE POWER is ACTUAL HORSE POWER.

MAXWELL CARS ARE SPLENDIDLY MADE AS WELL AS PERFECTLY DESIGNED.

Maxwell Features:

Multiple Disc Clutch.	**Bevel Gear Drive.**	**Three Point Suspension.**
No Pump.	**Great Reliability and Economy.**	**Metal Bodies.**

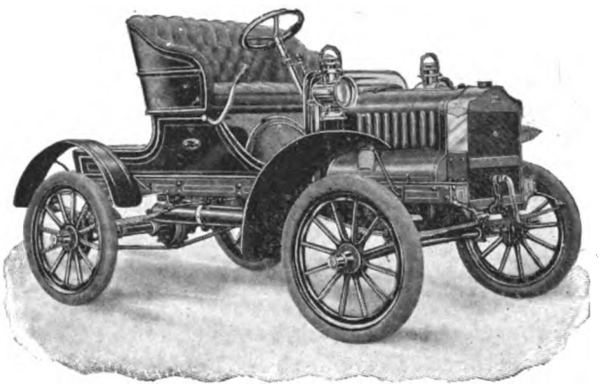
MAXWELL CARS are sold under the positive GUARANTEE that AS GOOD A CAR cannot be sold at a lower price.

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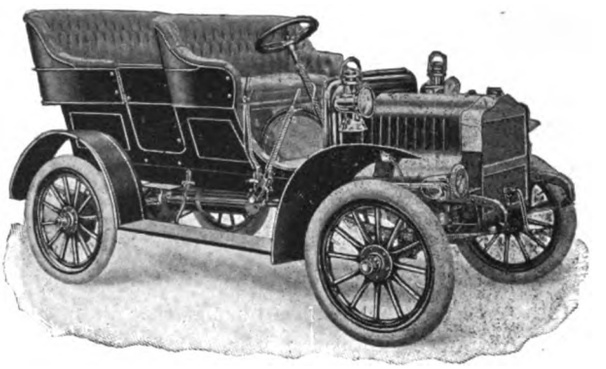
THE "Maxwell"

Perfectly Simple Simply Perfect

The Maxwell Line for 1906



10 H. P. MODEL L TOURABOUT.
$780 (F. O. B. Factories).



16-20 H. P. MODEL H TOURING CAR.
$1,450 (F. O. B. Factories).

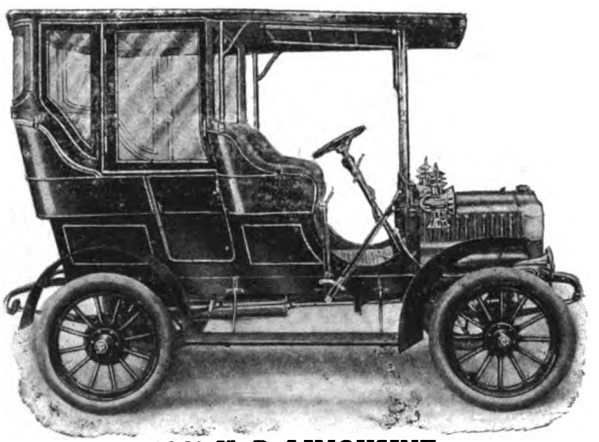
GLIDDEN TOUR.

Perfect score, 1,004 miles without a single adjustment, made with Model H. FOUR FIRST-CLASS CERTIFICATES.

LONG BRANCH.

Model H won the two mile free-for-all race for cars costing from $1,000 to $1,700, defeating cars of several times its rated horse-power.

Model L won the free-for-all handicap race, making a mile in 1 minute 18 seconds.



16-20 H. P. LIMOUSINE.
$2,000 (F. O. B. Factories).

"CLIMB TO THE CLOUDS."

Up Mt. Washington. Model H won the event and the highest honors in its class. GOLD MEDAL.

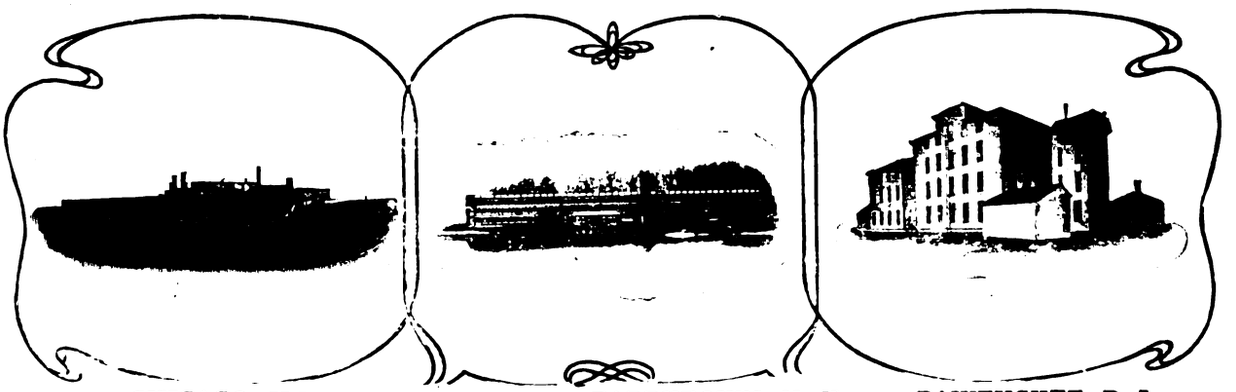
CAPE MAY RACES.

Model L won the runabout event for cars costing $1,000 or less.

Model H won the mile race for stock cars of 20 h. p. or less.

POUGHKEEPSIE RACES.

Model L defeated the entire field, including a 24 h. p. Fiat, 15 h. p. White, 30 h. p. Reo, 24 h. p. Peerless and 20 h. p. Stoddard-Dayton.



CHICAGO, ILL. MAIN PLANT, TARRYTOWN, N. Y. PAWTUCKET, R. I.

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THE "Maxwell"

Perfectly Simple Simply Perfect

WAVERLY RACES.

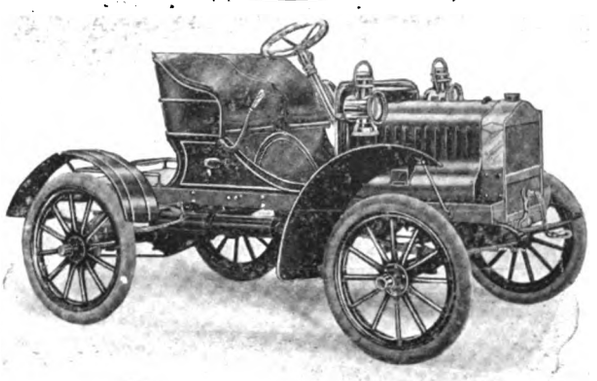
Model L won the five-mile handicap against eight cars in the fastest time ever made on the track for that distance, the track two laps to the mile, in 5 minutes 33 seconds.

PHILADELPHIA MOTOR CLUB RACES.

Model L won in the runabout class.

BALTIMORE RACES.

Model L won every race in the meet, defeating cars of double its rated power and several times its cost.



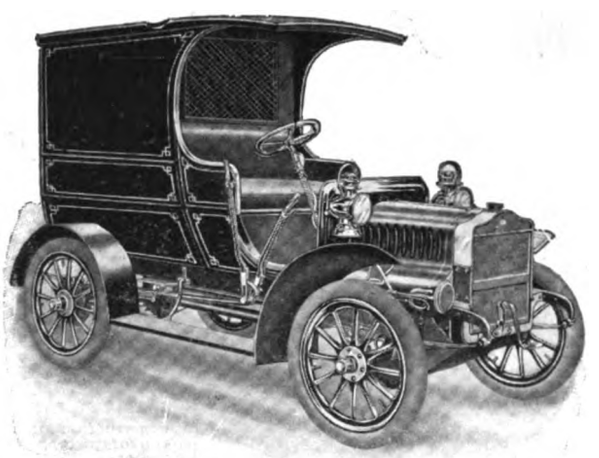
Model L won a special road race between Baltimore and Washington, a distance of 40 miles, in 1 hour 4 minutes, breaking the record held by a 40 h. p. car by 36 minutes. The time made by the MAXWELL was within four minutes of that made by the Congressional Limited over the Pennsylvania Railroad.

It is noteworthy that after this sterling performance the car was driven back to Baltimore without its engine having been stopped since it left that city.

10 H. P. GENTLEMEN'S SPEEDSTER.
The "50 an Hour" Car. $800 (F. O. B. Factories).



16-20 H. P. "DOCTOR" MAXWELL.
With Top, $1,375; Without Top, $1,300.
(F. O. B. Factories.)



16-20 H. P. DELIVERY WAGON.
$1,400 (F. O. B. Factories).

MAXWELL-BRISCOE MOTOR COMPANY,

Members American Motor Car Manufacturers' Association.

FACTORIES:

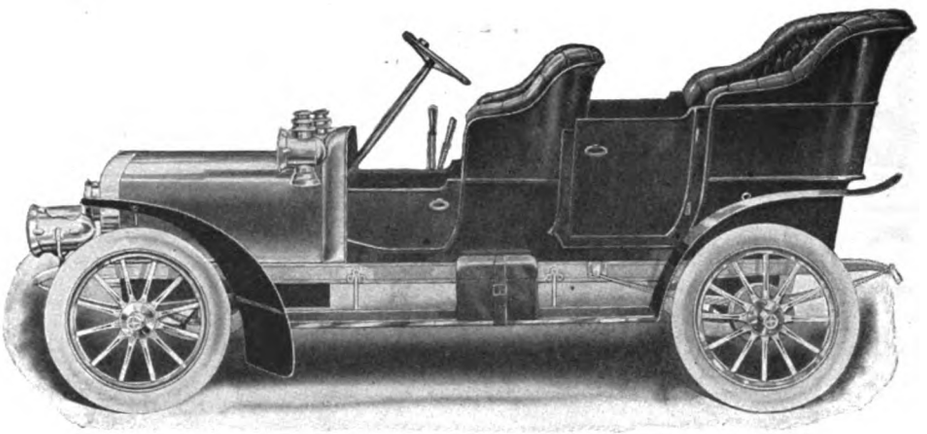
CHICAGO, Ill. | **Main Office, TARRYTOWN, N. Y.** | **PAWTUCKET, R. I.**

BRANCHES.

MAXWELL-BRISCOE, INC., New York, N. Y.
MAXWELL-BRISCOE McLEOD CO., Detroit, Mich.
MORRISON TYLER MOTOR CO., Boston, Mass.
FISHER AUTOMOBILE CO., Indianapolis, Ind.
MAXWELL-BRISCOE CHASE CO., Chicago, Ill.
RICHARD IRWIN & CO., Foreign Representative.

AGENTS DESIRING TERRITORY SHOULD APPLY AT ONCE.

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The Car for today, tomorrow and the years to come.
—Built by practical men.—

Aerocar

The one motor car powered and driven by the one practically tested reliable air-cooled motor—with a record of 3500 miles without an adjustment to connecting rod or bearings being necessary.

AEROCAR SPECIFICATIONS.

MODEL—A.
PRICE—$2800, f. o. b. Detroit.
BODY—"Side Entrance" Tonneau.
COLOR—Royal Blue.
SEATING CAPACITY—Five persons.
TOTAL WEIGHT—2000 pounds.
WHEEL BASE—104 inches.
WHEEL TREAD—54 inches.
TIRE DIMENSIONS—Front, 4x34.
" " rear, 4x34.
STEERING—Worm and nut.
BRAKES—Two (rear hub) and transmission.
GASOLINE CAPACITY—20 gallons.
FRAME—Pressed steel.
MOTOR POWER—24 h. p.
NUMBER OF CYLINDERS—Four.
CYLINDERS ARRANGED—Vertical in line.
COOLING—Air.
IGNITION—Jump spark with storage battery.
DRIVE—Shaft, bevel gear.
TRANSMISSION—Sliding gear.
CLUTCH—Leather-faced cone clutch.
SPEEDS—Three speeds forward and reverse.
ROAD CLEARANCE—9 inches.
STYLE OF TOP—Extension.

DETAIL INFORMATION.

The frame is of pressed steel, and sufficiently strong so that there is no possibility of its sagging or becoming distorted from the hardest possible use to which the car may be put.

The four cylinders of the motor are cast separately and are of a peculiar, symmetrical, flanged construction. The bore is 4 inches by 4 inches stroke. Both cylinders and pistons are made of a special gray iron mixture, very hard, fine grained, and close, and without speck or blow hole. The construction of piston and rings is such that it prevents an excess of lubrication accumulating on top of piston, obviating the usual deposit of carbon, generally found on either air or water cooled motors.

The crank case is in two pieces, and are fine specimens of aluminum castings, with handhole plates, making bearings and connecting rods easily accessible to inspection.

The mechanically operated valves, located in the cylinder head, are interchangeable and made of nickel alloy.

The crank shaft is of generous proportions, made from high carbon steel, hammered, forged, rough-turned and ground to size. Phosphor bronze and nickel Babbitt bearings, of ample wearing surface, are found throughout the motor.

The commutator is placed in a vertical position, which is very accessible. Both primary and secondary wiring are incased in fibre tube.

Carburetor is thoroughly automatic, making starting almost instantaneous and fuel consumption very economical.

Lubrication is of the splash system, through the agency of a Hill Precision Oiler.

(In addition to the peculiar construction of the cylinders to facilitate air cooling, a 15-inch fan is used the six blades of which are made of sheet brass. It is carried on Hess-Bright ball bearings. The construction of this fan is theoretically and practically correct, the blast being concentrated directly on the cylinders. On a still day, against the wind, the fan is unnecessary, the motor cooling entirely by the movement of the car. Some of these motors have been run 3500 miles, without an adjustment to the connecting rod or bearings being necessary.)

If possible, examine the **Aerocar** at the Automobile Shows. Let us give you a practical demonstration of its running merits.

Illustrated descriptive literature mailed on request. Won't you send for it.

The selling agency of the **Areocar** will prove a bonanza of profit. Territory going fast. If interested write promptly.

The Aerocar Company, Detroit, Michigan

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Diamond

SIDE WIRE SOLID TIRES

EXCEL IN THIS TYPE.

THEIR RECORD IS A DIAMOND RECORD

WHY TAKE A CHANCE?

Interesting Facts as to Weights and Sizes sent on request.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.
DETROIT—158 Jefferson Ave.
ST. LOUIS—3266 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—823 Huron St.
SAN FRANCISCO—606 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

POPE AUTOMOBILES

See our exhibits in
New York at Madison Square Garden only

POPE-WAVERLEY ELECTRICS

Great Variety of Up-to-Date Models.
$850 to $2,500
Pope Motor Car Co., Indianapolis, Ind.

POPE-TOLEDO TOURING CARS

20 H. P., Front Entrance, . Price $2,800
45 H. P., Side Entrance, . Price $6,000
35-40 H. P., Side Entrance, . Price $3,500
And a Complete Line of Other Models.
Pope Motor Car Co., Toledo, Ohio

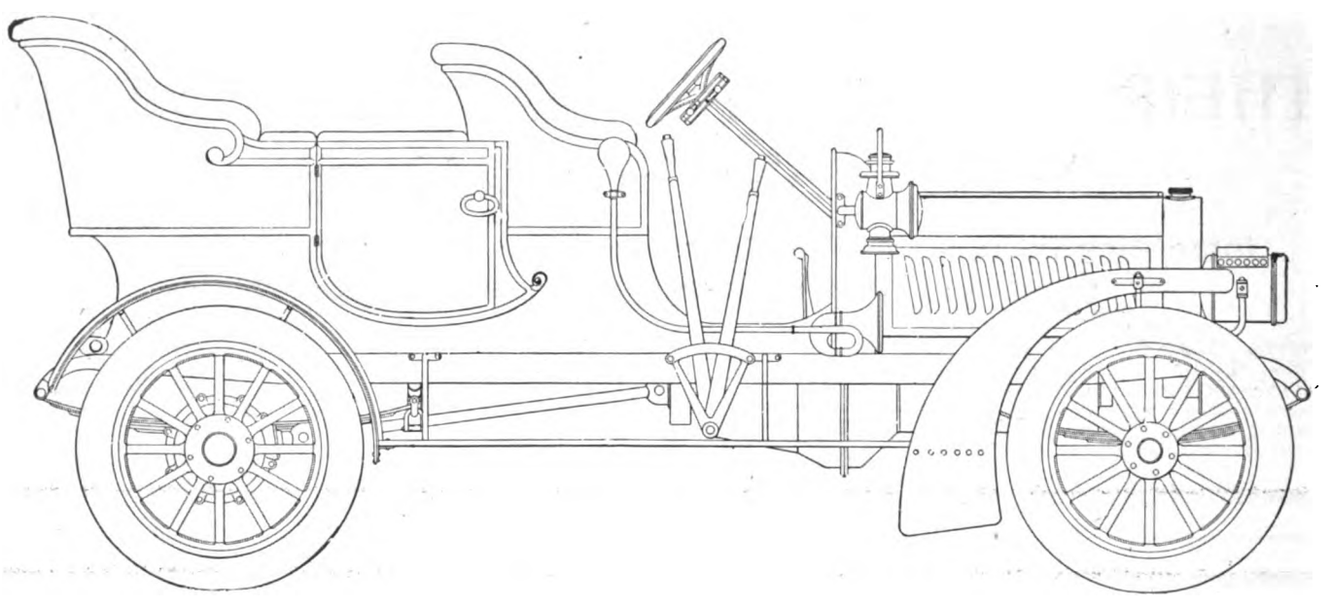
POPE-HARTFORD TOURING CARS

18 H. P., 2 Cylinder, . Price $1,600
20-25 H. P., 4 Cylinder, . Price, $2,500
Pope-Tribune, new model, Price $900
Pope Mfg. Co., Hartford, Con

Members A. L. A. M.

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ST. LOUIS
1906
"RIGS THAT RUN"



TYPE XVI
32-36 ACTUAL H. P.—$2500.

Every AUTOMOBILE, no matter what the PRICE, STYLE or CONSTRUCTION, contains some individuality which, in its builders' estimation places it above its competitors. Every manufacturer strives to have the best, and undoubtedly some one HAS THE BEST, but a fair verdict cannot be rendered by any one man. ONE exclusive feature does not constitute an entire MOTOR CAR no more than one individual constitutes a MILLION DOLLAR ORGANIZATION. An engine may be absolutely perfect, but if the power is not transmitted correctly to the rear wheels the car is a FAILURE, and vice-versa. To build a successful car, the manufacturer must give as much attention to the smallest details as the largest. THE ST. LOUIS MOTOR CAR COMPANY are the Pioneer Automobile Manufacturers of the UNITED STATES. FOURTEEN YEARS of BUILDING EXPERIENCE has taught us CONSIDERABLE. We know the material and style of construction best adapted for AMERICAN roads and CONDITIONS. We know how to manufacture intelligently and economically. WE KNOW that TYPE XVI is equal to any AUTOMOBILE built in America. Our claim is not based upon any ONE exclusive feature. It's "RIGHT" all the way. Compare our specifications with cars listing from $3000.00 up, then make arrangements for demonstration at any of the coming shows. We still have some valuable territory at our disposal and our AGENCY PROPOSITION is just as thorough as our car.

AGENTS who have already contracted for over two-thirds of our '06 product tell us that "TYPE XVI" will be the car of the year. We KNEW this four months back. If you are INTERESTED, it will be a pleasure to tell you WHY.

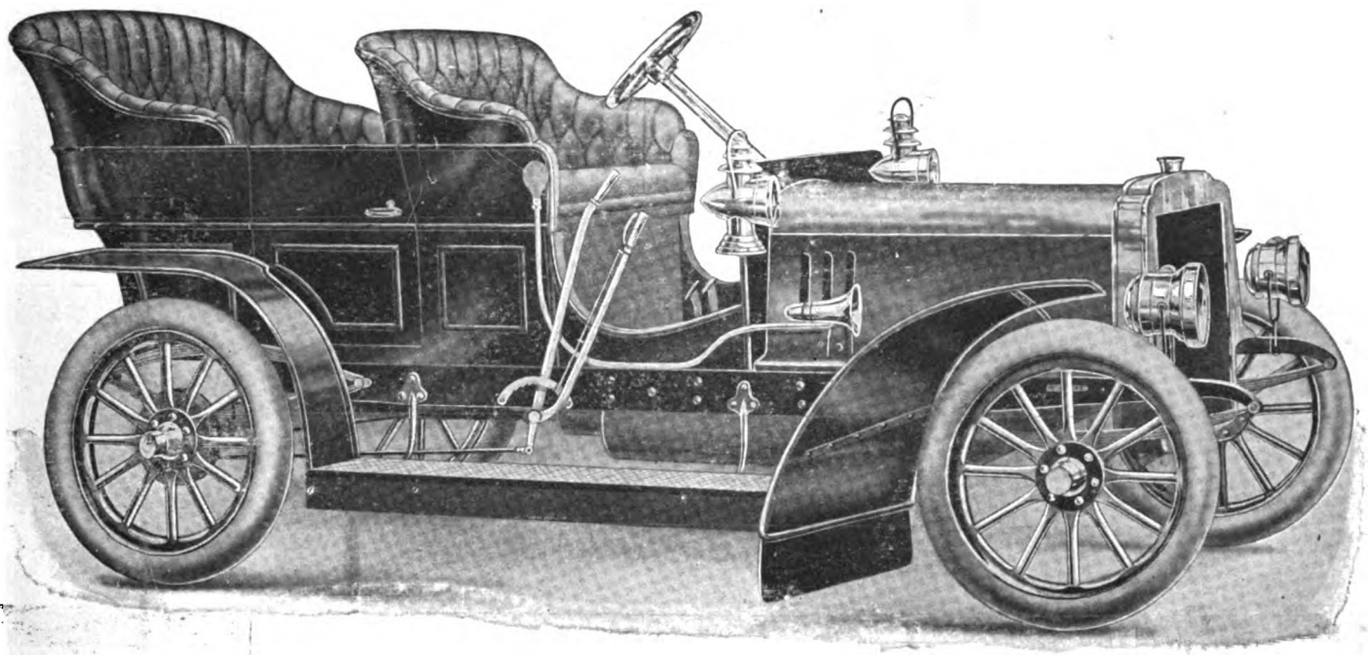
ENGINE. 32-36 ACTUAL H. P. 4 cylinder water cooled.
IGNITION. Jump spark. Splitdorf coil. Pitsfield timer. Storage battery and dry cells.
TRANSMISSION. Sliding train. Three forward and reverse.
REAR AXLE. Floating type, bevel, Timkem roller bearings throughout.
FRONT AXLE. I section, drop forged, roller bearings.
FRAME. Cold rolled pressed steel, special stock, channel section, full pan in under hood covering entire engine.
WHEEL BASE. 110 inches.
WHEELS. Superior quality; second growth hickory.
TIRES. 32 by 4 inches; optional.
VALVES. Mechanically operated; all interchangeable.
CARBURETTER. Float feed; automatic governor requiring no adjustment.
BRAKES. Transmission, foot and emergency lever, 5 in number.
BODY. Exceptionally roomy; will carry seven people; upholstering, general appearance and workmanship unsurpassed.
EQUIPMENT. Two brass side lights, one tail light, two head lights, full tool equipment, baggage haul, etc.
1906 CATALOG, GIVING FULL DETAILED DESCRIPTION, NOW REALY.

ST. LOUIS MOTOR CAR COMPANY, - Peoria, Ill.

SALES DEP'T: 1229 Michigan Ave,, Chicago, Ill.

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The Six-Cylinder Ford.



"Always a year or two ahead." When the single-cylinder car was "it" Henry Ford produced a double cylinder opposed motor, more powerful and at a lower price.

When the Automobile trade finally awakened to the possibilities of the two-cylinder opposed motor Mr. Ford produced a four-cylinder car at $2,000 that was in a class by itself, the public having been taught to believe that such a car could only be produced at a fabulous price.

And now, having exhausted the possibilities of the four-cylinder car in a touring car class, he has introduced it into the Runabout class, and in addition offers a six-cylinder car that is proportionately as far in advance of all competition as his first double opposed motor.

This is a wonderful car.

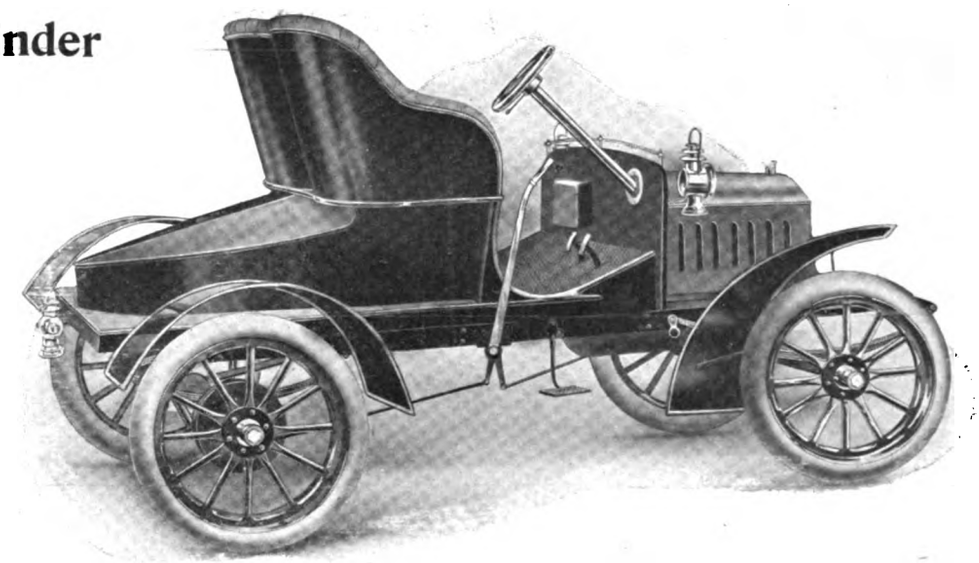
First, its six cylinders, with 40 horsepower, give a latitude of speed never before accomplished in a car of its class and weight, 2,000 pounds. From four miles per hour on a high gear up to fifty miles.

While one cylinder of this car will develop sufficient power to drive it along an ordinary asphalt pavement, the whole six cylinders inspire the driver with the confidence that there is an enormous latent energy in his motor, ready for any new demand without overloading the motor, making it the easiest controlled and most flexible automobile motor ever built.

When you have seen this motor in operation you will fully appreciate that we have the smoothest running automobile motor in the world.

Price, $2,500.00.

The Ford Four-Cylinder Runabout.



It is a fact that thousands of these cars are in course of construction.

Like all Ford cars, this one is a radical departure from previous and popularly accepted designs, and there is a reason behind every radical idea.

Henry Ford built a four-cylinder engine for his Runabout with fewer parts than the old-fashioned single-cylinder engine had, and the Ford Motor Co. have an enormous factory that does nothing but build motors for this Runabout, with a capacity of 100 complete engines every day.

The whole thing is very simple when you go about it right.

This is why we can build the Ford four-cylinder Runabout for $500.00.

We are making 40,000 cylinders,
10,000 engines,
40,000 wheels,
20,000 axles,
10,000 bodies,
10,000 of every part that goes into the car. Think of it! Such quantities were never heard of before. We buy 40,000 spark plugs—10,000 spark coils—40,000 tires—ALL EXACTLY ALIKE.

The first Runabout (Model A) we built cost $30,000—yet we sold duplicates of that model for $750.00. It is the quantity that counts.

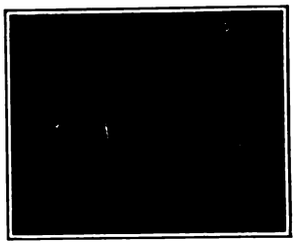
FORD MOTOR COMPANY, Detroit, Mich.

Members American Motor Car Manufacturers Association, Chicago

BRANCHES 147-149-151-153 Columbus Ave., Boston; 1721 & 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia 1413 Michigan Ave., Chicago; 1916 S. E. Euclid St., Cleveland; 308-310 E. 11th St., Kansas City.

Canadian Trade supplied by Ford Motor Co of Canada, Ltd. Walkerville, Ont

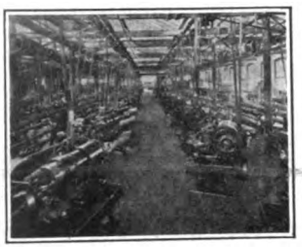
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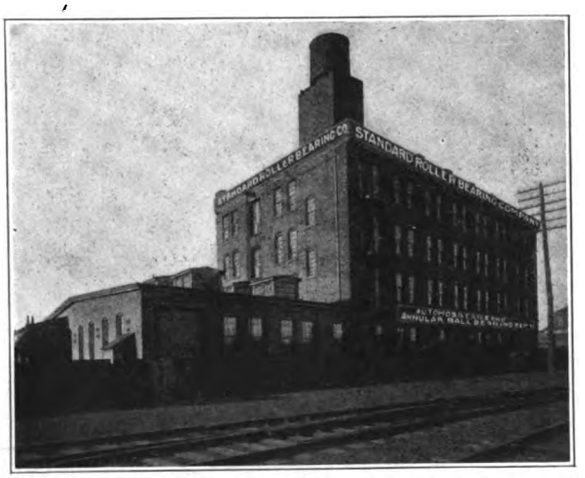






OUR PLANT AND PRODUCTS



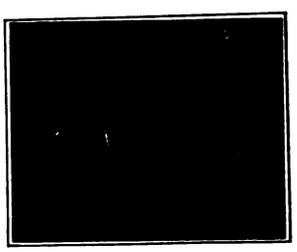


Automobile Axle and Annular Ball Bearing Department









STANDARD ROLLER BEARING COMPANY

48th & Girard Avenue,
PHILADELPHIA, PA.

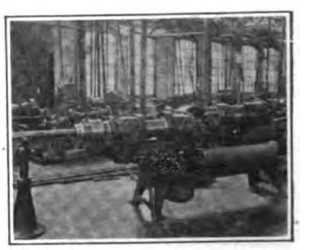
Send for New Catalogue.











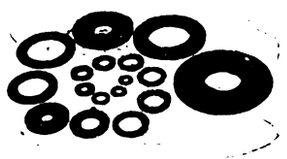
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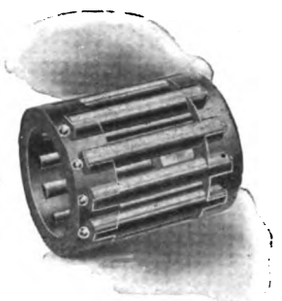
Flanged Annular Ball Bearing.



Grooved Ball Thrust.



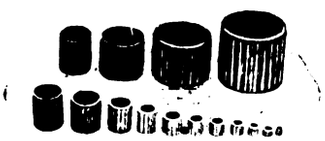
Ball Thrust Collars.



Journal Roller Bearing.



Annular Ball Bearing. Full Type.



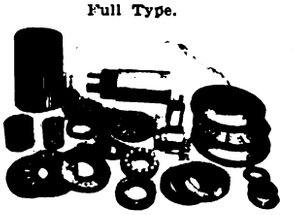
Journal Roller Bearings.



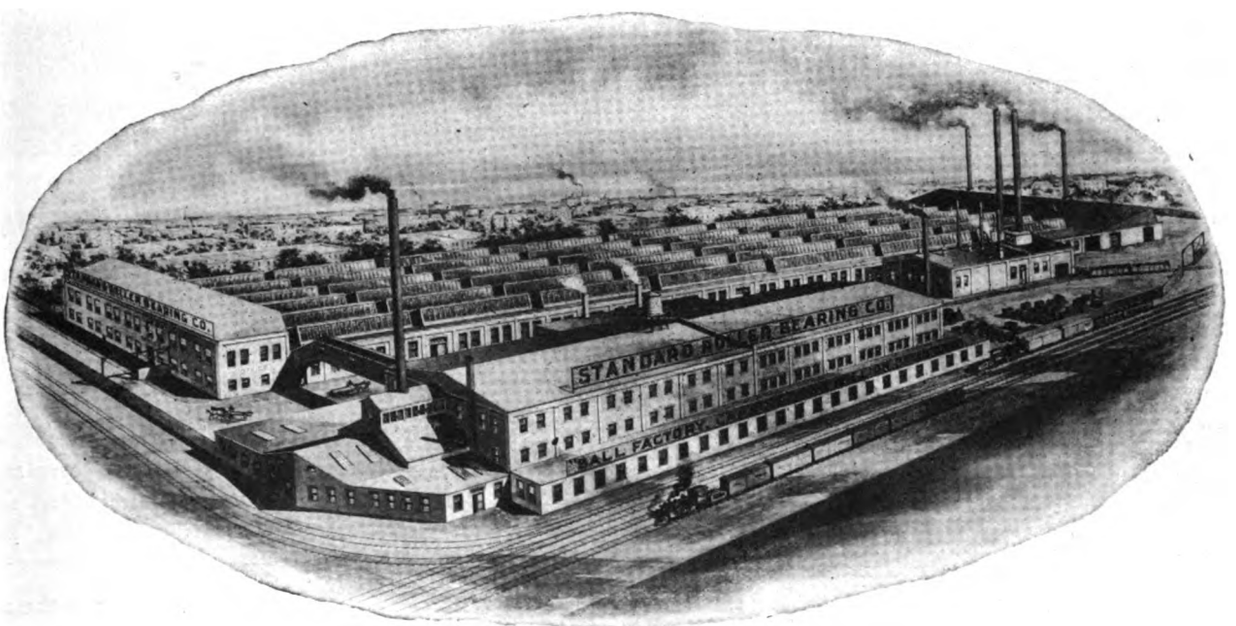
Rear Automobile Hubs.



Plain Roller Thrust.



Miscellaneous Bearings.



Total Floor space, including Automobile Axle and Annular Ball Bearing Department, 175,000 square feet.



Front Axle.



Lemoine Axle.



Bevel Gear Axle.



Chain Drive Axle.



Roller Bearing Hangers.



Sleeves and Casings.



Ball Thrust Collar.



Journal Roller Bearings.



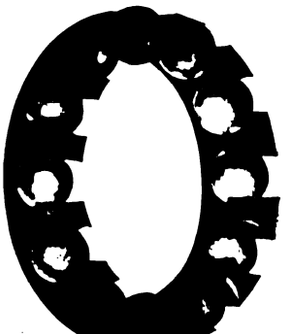
Annular Ball Bearing. Silent Type.



Roller Bearing with Casing and Sleeve.



Front and Rear Hubs.



Ball Retainer.

STANDARD ROLLER BEARING COMPANY

48th & Girard Avenue,
PHILADELPHIA, PA.

Send for New Catalogue.

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National

RELIABILITY

was demonstrated in the most convincing manner at Indianapolis, on November 16th-17th, 1905, when a **National Stock Car** made 1094 3-16 miles in 24 hours, breaking the World's Record by **78 9-16 Miles.**

At the NEW YORK SHOW 69th Regiment Armory Jan. 13th to 20th

WATCH FOR THE ROUND RADIATOR

AND

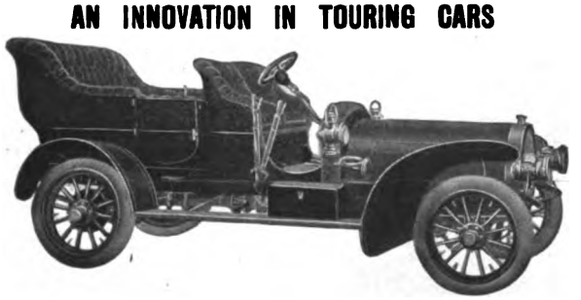
At the CHICAGO SHOW Coliseum Spaces 76-77-78 Feb. 3d to 10th

THE CAR THAT BROKE THE WORLD'S RECORDS



National, **Model D, 4 cyl.,** 35-40 H. P. Price $3,000.

AN INNOVATION IN TOURING CARS



National, **Model E, 6 cyl.,** 50-60 H. P. Price $4,000.

Stylish, powerful, smooth runnnig, easily controlled. Aluminum body, seats seven passengers comfortably, ***all facing forward.***

WRITE FOR PARTICULARS

NATIONAL MOTOR VEHICLE COMPANY

1007 E. 22d STREET, - INDIANAPOLIS, IND.

DISTRIBUTORS

Linscott Motor Co.....163 Columbus Ave., Boston, Mass.
Homan & Schuls Co.....38th St. & Broadway, New York, N. Y.
Ralph Temple Auto Co.....311 Mich. Ave., Chicago, Ill.
Liberty Auto Co.....133 Beatty St., Pittsburg, Pa.
Tioga Auto Co.....Broad and Tioga Sts., Philadelphia, Pa.
Colonial Auto Co.....3944 Olive St., St. Louis, Mo.
The Fisher Auto Co.....330 N. Illinois St., Indianapolis, Ind.

Member American Motor Car Manufacturers' Association, Chicago.

The Incomparable

WHITE

The Car for Service.



STEAM IS THE WORLD'S STANDARD MOTIVE POWER.

On land and on sea, steam power is recognized as the most reliable, the simplest and the safest. No power other than steam is ever seriously considered by engineers for important work. The tremendous development of electrical machinery has served only to increase the importance of the steam engine which is, in almost every electrical installation, the "prime mover."

In adapting steam power for use in the automobile, it was early found that some radical changes would be necessary in the conventional designs of steam machinery. The White System, introduced in 1901, has from the first furnished a complete solution of the problem, as has been abundantly demonstrated by five years' of continuous White success.

The achievements of White cars in all endurance and reliability contests and the notable tours made each year by White owners are the most inspiring and convincing chapters in the history of American automobiling.

See our exhibit at the Armory Show in New York.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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The manufacturer who equips his cars with Veeder odometers reaps a crop of mileage enthusiasts, who, in the face of the odometer readings, will make no unreasonable demands for replacements or free repairs.

THE VEEDER MFG. CO., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

10,000 MILE TIRE—MICHELIN

King of all Pneumatics

FAMOUS THROUGHOUT THE WORLD

EXAMINE THEM AT

Space 145, Madison Square Garden, January 13th to 20th

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29th STREET, NEW YORK

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MADISON SQUARE GARDEN

January 13th to 20th, 1906, Inclusive

Sixth National Automobile Show

The most complete line of American and Imported Cars and of Parts and Accessories ever exhibited. Madison Square Garden has never before been so beautifully and artistically decorated.

Gasoline Automobiles

(AMERICAN)

APPERSON	APPERSON BROS. AUTOMOBILE CO.
AUTOCAR	AUTOCAR CO.
BUICK	BUICK MOTOR CO.
CADILLAC	CADILLAC MOTOR CAR CO.
COLUMBIA	ELECTRIC VEHICLE CO.
ELMORE	ELMORE MANUFACTURING CO.
FRANKLIN	H. H. FRANKLIN MFG. CO.
HAYNES	HAYNES AUTOMOBILE CO.
HEWITT	HEWITT MOTOR CO.
KIRK	KIRK MFG. CO.
KNOX	KNOX AUTOMOBILE CO.
LOCOMOBILE	LOCOMOBILE CO. OF AMERICA.
MATHESON	MATHESON MOTOR CAR CO.
NORTHERN	NORTHERN MFG. CO.
OLDSMOBILE	OLDS MOTOR WORKS.
PACKARD	PACKARD MOTOR CAR CO.
PEERLESS	PEERLESS MOTOR CAR CO.
PIERCE-ARROW	GEORGE N. PIERCE CO.
POPE-HARTFORD, POPE-TRIBUNE	POPE MANUFACTURING CO.
POPE-TOLEDO	POPE MOTOR CAR CO.
ROYAL-TOURIST	ROYAL MOTOR CAR CO.
S.-M. SIMPLEX	SMITH & MABLEY INC.
STEARNS	F. B. STEARNS CO.
STEVENS-DURYEA	J. STEVENS ARMS AND TOOL CO.
STUDEBAKER	STUDEBAKER AUTOMOBILE CO.
THOMAS FLYER	E. R. THOMAS MOTOR CO.
WALTER CAR	WALTER AUTOMOBILE CO.
WALTHAM-ORIENT	WALTHAM MANUFACTURING CO.
WINTON	WINTON MOTOR CARRIAGE CO.

(IMPORTED)

CLEMENT-BAYARD	SIDNEY B. BOWMAN AUTO CO.
DARRACQ	AMERICAN DARRACQ AUTO CO.
C. G. & V., DAIMLER (English), DECAUVILLE	DECAUVILLE AUTOMOBILE CO.
DE DIETRICH	DE DIETRICH IMPORTING CO.
F. I. A. T.	HOLLANDER & TANGEMAN
MERCEDES, PANHARD, RENAULT	SMITH & MABLEY INC.
ROCHET-SCHNEIDER	AUTO IMPORT CO.

Electric Automobiles

BUFFALO	BABCOCK ELECT. CARRIAGE CO.
CANTANO	CANTANO ELECT. TRACTOR CO.
COLUMBIA	ELECTRIC VEHICLE CO.
COLUMBUS	COLUMBUS BUGGY CO.
GALLIA	GALLIA ELECTRIC CARRIAGE CO.
POPE-WAVERLY	POPE MANUFACTURING CO.
STUDEBAKER	STUDEBAKER AUTOMOBILE CO.
VEHICLE EQUIPMENT	VEHICLE EQUIPMENT CO.

Commercial Automobiles

COLUMBIA	ELECTRIC VEHICLE CO.
HEWITT	HEWITT MOTOR CO.
KNOX	KNOX AUTOMOBILE CO.
OLDSMOBILE	OLDS MOTOR WORKS
POPE-WAVERLY	POPE MFG. CO.
STUDEBAKER	STUDEBAKER AUTOMOBILE CO.
VEHICLE EQUIPMENT	VEHICLE EQUIPMENT CO.

All Gasoline Automobiles exhibited at the Garden are licensed under Geo. B. Selden U. S. patent No. 549,160.

ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS

7 East 42d Street, NewYork

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The Stearns

A fulfillment of Prophecy

One Model 45 Horse Power

Produced by a determination to fulfill NOW the prophecy of ultimate supremacy for American Automobiles—the result of devoting one factory for 10 years to one perfect model.

We buy material in any country that produces the best for the purpose; but American machinists finish it all—they spend over two thousand hours on each car finishing parts otherwise complete. More time and care than any other touring car receives.

Fitted parts are required when picked up at random to snap together like your watch lid, hang tight, yet part in the hands.

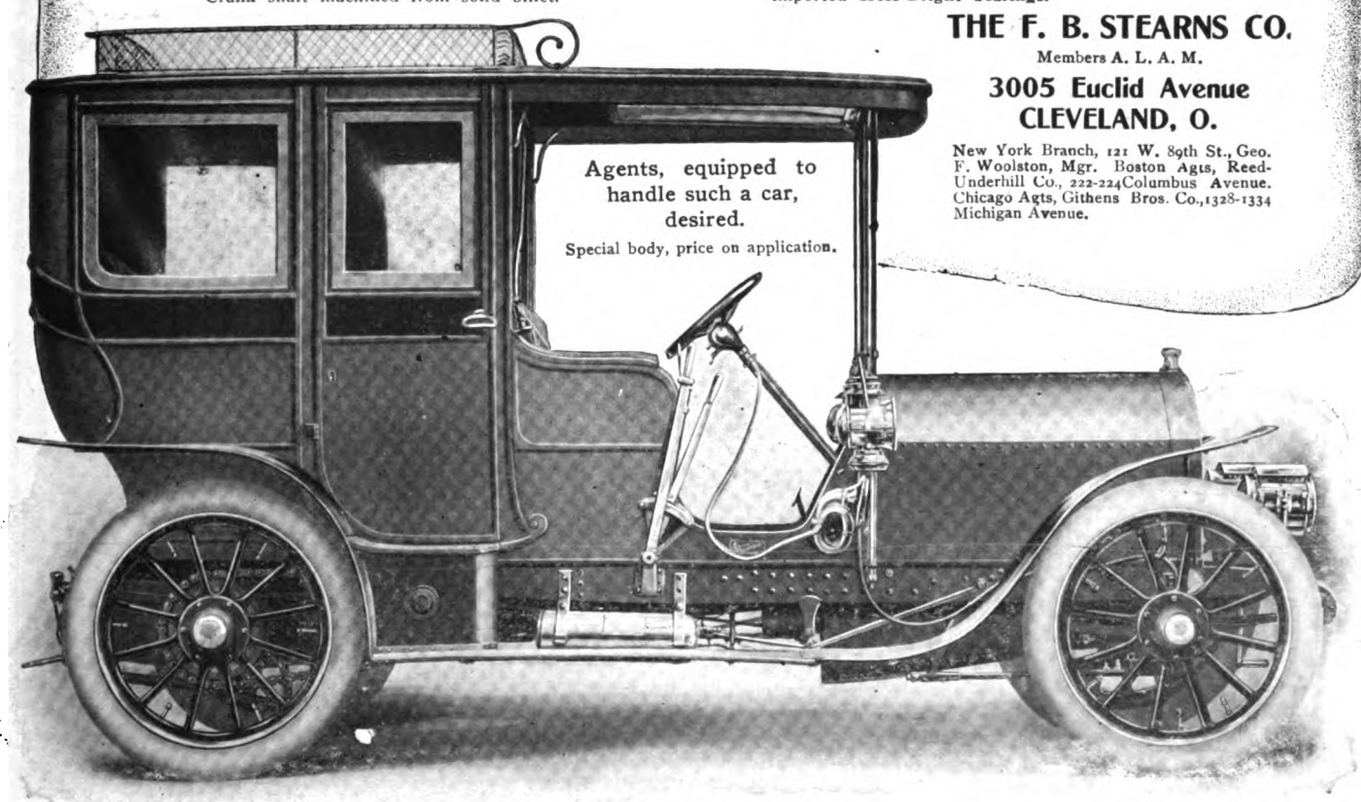
By what process could any maker anywhere produce a better car? Where is another so made?

After producing this car we figured the cost and selling price. We were pleased to find that the duties and excessive commissions on our only competitors, make our charge—$4,250—barely half the cost of any foreign car that makes a comparison possible.

We seek communication with those who will appreciate this car. For such it will give a service greater than any other mechanism the world has produced. Shall we send our book of details?

SPECIFICATIONS

40-45 h. p.
4-cylinder motor, forward under hood.
Transmission 4 speeds forward, one reverse, selective type.
Ignition, jump spark with magneto, batteries and coil.
Carburetor, double automatic.
Gears and shafts, special chrome nickel steel.
Crank shaft machined from solid billet.
I-section axles, forged in one piece.
Frame, pressed steel.
Wheel base, 118 inches.
Double chain drive.
Transmission equipped with Imported Hess-Bright bearings.
Wheels, 36 x 4 front, 36 x 4½ rear, mounted on imported Hess-Bright bearings.



Agents, equipped to handle such a car, desired.

Special body, price on application.

THE F. B. STEARNS CO.

Members A. L. A. M.

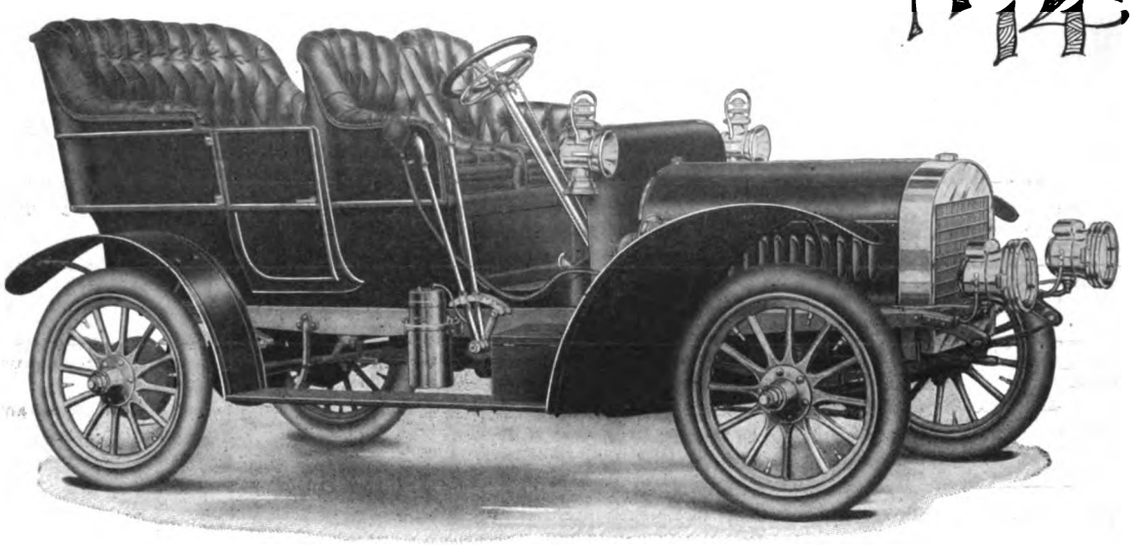
3005 Euclid Avenue
CLEVELAND, O.

New York Branch, 121 W. 89th St., Geo. F. Woolston, Mgr. Boston Agts, Reed-Underhill Co., 222-224 Columbus Avenue. Chicago Agts, Githens Bros. Co., 1328-1334 Michigan Avenue.

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Rambler

Model 14



Positive action brings positive results.

The steady consistent efforts of the Rambler factory to produce a perfect car for the purposes of their various models have resulted in Model 14.

In this car is exemplified that staunchness of construction, simplicity of control and perfect accessibility that have been the features of the earlier models.

It is a medium weight five-passenger touring car, with a four-cylinder motor, 20-25 horse power, sliding gear transmission and shaft drive.

Every detail is strictly up to the minute, and an examination will convince you that it is easily the car of the year.

NEW YORK SHOW SPACE B-1

Thos. B. Jeffrey & Company

KENOSHA, WIS.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, January 11, 1906. No. 16

RAILROADS TO REDUCE RATES

Eastern Lines Will at Last Reclassify Tires—Now Pressing Westerners.

The tire manufacturers have drawn "first blood" from the railroad companies. Following a cry of "don't shoot," the latter literally have "come down," that is, in their rates. The Eastern Freight Association Committee has given assurances that after February first rubber tires will be given the benefit of third-class rates, instead of being mulcted first-class as at present. The carload rate will also be reduced.

It has taken several years' effort on the part of the manufacturers to bring about this result, which, however, will apply only to shipments east of the Mississippi River and north of Washington, D. C. It was not achieved until the railroads concerned were threatened with being haled before the Interstate Commerce Commission and it was made plain that the tire interests had accumulated a mass of evidence to support their allegation of excessive and discriminating rates. This evidence all tended to show that goods of far greater value and occupying more cubic space were being accorded far more favorable rates.

It is expected that the Western railroads, against which the Fisk Rubber Co., acting for the tire industry, filed a bill of complaint with the Interstate Commission, also will now begin to see the light. The Fisk complaint is directed against the Atchison, Topeka & Santa Fe, the Chicago & North Western, the Chicago, Burlington & Quincy, the Chicago, Milwaukee & St. Paul, the Chicago, Rock Island & Pacific, the Colorado Midland, the Denver & Rio Grande, the Great Northern, the Missouri Pacific, the Oregon Railroad & Navigation Company, the Oregon Shirt Line, the Southern Pacific, the Union Pacific, the Wabash and the Wisconsin Central Railway Companies.

These railroads are exacting a rate of two and one-half times first-class, which makes the charge on less than carload lots in excess of the express charges. The action taken by the Fisk Company is not in any way connected with the present railroad rate agitation, and its only significance is in the classification of rubber tires in general.

Importer is Permanently Enjoined.

Stephen de Feher, who traded in Philadelphia under the high-sounding title, the German and French Automobile Industrie, has been "tied up" by a Selden injunction. After he had imported a number of unlicensed cars, he was sued in the United States Circuit Court for the Eastern District of Pennsylvania, for infringement of the Selden patent, No. 549,160. de Feher filed an answer denying the validity of the patent, but submitted no proofs and interposed no defense. Judgment was therefore entered in favor of the Electric Vehicle Co., and Horace Pettit, Esq., appointed master to assess the amount of damages, following which a perpetual injunction was issued.

Dolsons Become a Corporation.

The Dolson Automobile Co. is the new corporate name for John L. Dolson & Sons, Charlotte, Mich., the carriage makers who build the Dolson car. The company has been reorganized with a capital of $100,000 and will devote its time to automobiles exclusively. John L. Dolson has been made president, D. Elmore Dolson, secretary, and W. Elton Dolson treasurer of the new company.

Leavitt and Bill Separate.

Leavitt & Bill, of San Francisco and Los Angeles, one of the important jobbing houses on the Pacific coast, unexpectedly dissolved partnership on the 1st inst. The senior partner of the firm, J. W. Leavitt, who is at present in the East, will retain the San Francisco business, while J. T. Bill will remove to Los Angeles and take charge of the house there.

Benjamin Goes to Buffalo.

C. A. Benjamin, long sales manager for the H. H. Franklin Mfg. Co., has switched from gasolene cars to electrics. This is to say, he has resigned his position with the Franklin and engaged with the Babcock Electric Carriage Co., of Buffalo, N. Y.

TURNS ON $150,000 CLAIMANT

Goodyear Retaliates Quickly and Hard—Attaches Everything in Sight.

It is probable that the New York-Broadway Tire Co. now wishes it "hadn't." The Goodyear Tire and Rubber Co. has shown them that two can play at the game of litigation and as a direct result, keepers have been for several days in charge of the New York-Broadway establishments in New York and Brooklyn, while their bank accounts have also been tied fast in legal knots.

It will be recalled that about a month since the New York-Broadway Rubber Tire Co. caused to be instituted an action against the Goodyear Co. for $150,000 damages for alleged breach of contract and other things, and promptly attached the Goodyear assets to secure the claim. The Goodyear people quickly filed a bond and released the attachment. They pointed out that the "damage" complained of did not commence to be felt until they began pressing the New York-Broadway Co. for an overdue account.

If by filing their suit for $150,000, the latter hoped to relieve the pressure, they were sadly mistaken, for last week the Goodyear Co. retaliated by instituting proceedings to recover the amount of their bill, some $4,000. They went about it in no uncertain fashion, too. They attached practically everything belonging to the New York-Broadway Co. on which they could lay their hands. This included the bank accounts and the stock in the two stores. Keepers were duly placed in charge of the latter and there they were at last accounts, the New York-Broadway Co. apparently having found it difficult to obtain the necessary bonds to release the attachments.

Detroit Body Plant Destroyed.

Fire of an unknown origin last week almost completely destroyed the factory of the Michigan Automobile Body Co., at 1425-1441 Gratiot avenue, Detroit. The loss was $10,000 with $5,200 insurance.

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The Week's Incorporations.

Lenover, Pa.—Chalfant Motor Car Co., under Pennsylvania laws, with $50,000 capital. Corporators not named.

Brooklyn, N. Y.—Trans-River Auto Co., under New York laws, with $15,000 capital. Corporators—A. T. Herd, O. R. Ferguson and C. W. Baker.

New York City, N. Y.—Eagle Tire Repair Co., under New York laws, with $1,000 capital. Corporators—J. G. Battle, Jr., E. J. Krimsky and L. J. Reynaud.

New York City, N. Y.—DeDietrich Import Co., under New York laws, with $250,000. Directors—W. C. Allen, Charles Raoul-Duval and C. H. May.

Milwaukee, Wis.—Krueger Automobile Co., under Wisconsin laws, with $10,000 capital. Corporators—Edward Krueger, W. H. Hathaway and George J. Besnal.

Hamilton, Ohio.—West Side Motor Co., under Ohio laws, with $10,000 capital. Corporators—John E., Clara A., Charles C. and Katie C. Schmitt and Clarence Murphy.

Denver, Col.—Denver Auto Goods Co., under Colorado laws, with $10,000 capital; to deal in accessories. Corpirators—H. O. Cartwright, Smith McKay and J. W. Foaster.

Toledo, Ohio.—Cooney Carriage Co., under Ohio laws, with $10,000 capital; to make Cooney, John McGettigan, Charles R. Bowman, Josephine S. Lindsay and John V. Todd.

New York City, N. Y.—Cryder & Co., under New York laws with $3,000 capital; to make automobiles. Corporators—H. C. Cryder, T. A. Havemeyer and Townsend Morgan.

Oklahoma City, Okla.—New Motor Roadway Co., under Oklahoma laws, with $150,000 capital. Corporators—Theodore A. Johnson, Richard G. Strobhard and A. E. Ashbrook.

Detroit, Mich.—B. Webster Co., under Michigan laws, with $10,500 capital; to deal in automobiles. Corporators—Benjamin Webster, R. H. Mockbridge and H. R. Mockbridge.

Brooklyn, N. Y.—Hugo Tollner & Sons, under New York laws, with $25,000; to deal in automobiles, vehicles, etc. Corporators—Hugo Tollner, Hugo Tollner, Jr., and Edwin Tollner.

New York City, N. Y.—Breese, Lawrence & Moulton Motor Car & Equipment Co., under New York laws, with $100,000 capital. Corporators—S. S. Breese, A. J. Moulton and H. C. Dickinson.

Bridgeton, N. J.—Standard Amusement and Manufacturing Co., under New Jersey laws with $50,000 cauital; to conduct garage.—Incorporators—Albert R. McAllister, Clarence Crane and Elmer H. Crane.

Jersey City, N. J.—The Automobile Wheel and Rim Co., under New Jersey laws with $200,000 capital; to make wheels, rims and appliances. Corporators—Isaac Hodge, E. C. Turner and Edgar J. Hodgson.

Toledo, Ohio.—Safety Storm Front Co., under Ohio laws, with $10,000 capital; to make plate glass storm fronts for automobiles. Corporators—A. H. Merrell, John M. Ormund, James York, N. O. Einter and J. N. Reid.

Lockport, N. Y.—American Motor Truck Co., under New York laws, with $10,000 capital, to make commercial vehicles. Corporators—H. J. Babcock, Robert Hall, Chas. R. Bishop, Burt W. Hall and Henry C. Eddy.

Knoxville, Tenn.—Scarborough-Schultz Co., under Tennessee laws, capital not named; to make automobile tire protectors. Corporators and officers—W. W. Scarborough, president; C. E. Schultz, general manager; C. W. Henderson, secretary-treasurer.

Kitto Coquettes with Des Moines.

Eastern inventors and promoters who fail to astonish the inhabitants of this section of the country or to revolutionize present day methods by their schemes, seem to take Horace Greeley's suggestion, "Go West, young man!" in all its literalness. E. J. Pennington, of "vibrationless motor" fame, whose methods have been revealed in the Motor World from time to time; Wm. F. Carter, of the unidentified "million dollar American Mfg. Co., Inc., of Washington, D. C.," who is still seeking some fruitful branch upon which to light; and others, all have gone West.

Wm. H. Kitto, an ex-employe of the Eisenhuth Horseless Vehicle Co., who organized the Simplicities Auto Co., of Middletown, Conn., which built one automobile during the one year of its interesting existence and whose affairs are now being wound up with the usual loss to its stockholders, is the latest emigrant. A Des Moines, Iowa, publication states that Kitto is in that city for the purpose of "promoting a factory to manufacture arctic radiators, supremus carburetters and eventually gasolene motors."

Mr. Kitto, who is "an Englishman, formerly having lived in London, where he has had a wide experience in the manufacture of automobiles," says the paper, "would prefer to locate in the West as he believes it offers more opportunities and that it is in the West that the automobile trade is to be heaviest during the coming years."

Extent of Lumber Used.

A Western manufacturer is authority for the statement that more lumber is used in the manufacture of bodies and tonneaux for automobiles than for carriage bodies; in fact, from three to four times as much. "There are about two automobiles built to every carriage," he says, "and when it is considered that a body for the ordinary four or five passenger automobile contains as much wood as two or three ordinary carriage bodies, it can be easily understood why every body factory in the country is taxed."

In the Retail World.

W. D. Grow, Marysville, Cal., has purchased a plot at Third and F streets, on which he will build a garage.

Another story is being added to the garage of E. C. Horton, at White Plains, N. Y. The alterations will be finished next month.

F. E. Lockwood, Norwalk, Conn., is erecting a brick garage to replace his old repair establishment. It will measure 40 x 85 feet and will be finished by May 1.

Luther W. Wright, South Norwalk, Conn., is preparing to erect a three-story brick garage, 61 x 63 feet, at that place. It will be completed by May 5.

George J. Dunham, the Boston agent for the Royal Tourist car, has been forced to enlarge his salesrooms. He has taken an adjoining store and is now occupying from No. 182 to 188 Columbus avenue.

To secure necessary elbow room, E. S. Hessels is enlarging his garage at White Plains, N. Y. When completed the establishment will measure 135 x 56 feet. A cement floor is one of the improvements.

William W. Pope & Sons, of Franklin Furnace, N. J., have purchased ground at Stanhope, N. J., on which they will erect a garage. The firm will deal in new and second-hand cars and do a general repair business.

The King Mfg. Co., Springfield, Ill., who make the King tops for automobiles, have leased the building in Main street between Centre and Factory streets. As soon as necessary alterations are made the top makers will move in.

The Morrison-Tyler Co., of Boston, Mass., is remodeling its showrooms on Massachusetts avenue. The company has taken an adjoining store and removed the partitions, thus throwing the whole place into one large establishment.

The Central Garage, 107 South Water street, Rockford, Ill., formerly owned by Seeburgh & Miller, has again been sold. F. I. Miller, who was a senior member of the firm that sold out about two months ago to Lundstrom & Peterson, has bought it again. A number of improvements are contemplated.

Stamford, Conn., will have one of the most complete garages in the State when that of William Clark, now building, is completed. It will be fire-proof throughout, of cut stone and cement construction and will be fitted with turntables and up-to-date machinery. Its dimensions are 40 x 90 feet.

A. A. O'Neill & Bro. have leased the large building at the corner of City Hall avenue and Randolph street, Norfolk, Va., and as soon as improvements are made will open the only garage in that city and which will be one of the largest in the South. The building measures 40x100 feet. The firm will feature the Rambler cars for 1906.

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RAIDED BY THE POLICE

When Daimler was an Object of Suspicion —How the Motor was Evolved.

In an interesting interview with the two sons of Gottlieb Daimler, the founder of the motor industry, published in the Allgemeine Automobil Zeitung, several points concerning the very earliest days of his unceasing labor to popularize the automobile transpired, and they form a valuable addition to the history of the whole movement.

Gottlieb Daimler's great idea in life was to possess a vehicle driven by motor-power at a time when the gas engine industry was in its infancy and an internal combustion engine using gasolene as a fuel almost unheard of. The first steps taken were to improve the ignition of the gas engine, and Maybach, who has somehow or other since been lost to fame, and Daimler, carried on their experiments in a tiny shop at Cannstatt, on the very spot where the Daimler memorial stands to-day.

Cannstatt was then a small town, and these secret experiments, of which everybody had heard and nobody knew the raison d'etre, aroused the suspicion of the police. One night the two inventors were sitting plotting and planning, when admittance was desired in the name of the law, and a whole body of police officials entered to arrest the—coiners! After profuse excuses were made by the police, when they discovered their mistake, Daimler and Maybach were left in peace to continue their work on the engine.

With much experimenting the speed of the experimental motor was increased to 600 revolutions a minute, 200 being the utmost until then; and as soon as the ignition was improved, Daimler devoted his attention to the construction of a vertical in place of a horizontal motor.

The first automobile motor was built into a bicycle, to which little safety wheels on outriggers were added in both sides, as none of the Daimler family could ride a wheel. All the additional castors ever accomplished was to attempt to throw the rider at every turning. Nevertheless, Adolf Daimler, Jr., once managed to ride the mile and a half from Cannstatt to Unterkheim, without more than two accidents. It was hardly a pleasant ride, as the exhaust was immediately beneath the saddle, which became hotter and hotter, till young Daimler preferred to dismount.

This somewhat discouraged the builders, and they determined to fit the motor into a boat. A workman, sworn to secrecy, carried the motor, carefully wrapped up, to the Neckar in the small hours of the morning, and trial spins were undertaken until dawn, when the motor was again taken away with the same secrecy. These trials were successful from the start, but it is interesting to note that at this time there was such a fear of the unknown qualities of gasolene that electric wires strung on porcelain buttons, were fitted all around the sides of the boat, and the public was informed that it was driven by electricity.

After Gottlieb Daimler's success with the motor-boat he returned to his pet idea, the car. He ordered an ordinary horse-drawn phaeton, and upon this he fitted up the 1½ h. p. "standing clock" shaped motor. Soon after this motor phaeton came the steel quadricycle, and both these vehicles are now in the Munich museum. The steel cycle possessed all the principles of the latter-day type—vertical motor, speed changes by means of sliding gears, differential gear, the same as the present; in short it was absolutely a motor-car. Daimler, who was of the slow-going but very sure type, was only prevailed upon by much pressure to manufacture, as his motto was "either something good or not at all." He found his fullest and earliest appreciation in France, where Levassor introduced the Daimler productions, and by so doing laid the foundation of the firm of Panhard & Levassor.

Features of Matheson's New Factory.

The plant of the Matheson Motor Car Co., now building at Forty Fort, a suburb of Wilkesbarre, Pa., is rapidly nearing completion and the company will soon move from its present location in Holyoke, Mass.

The main buliding has a width of 80 feet and a length of about 600, about a city block. In addition to the main building there are three buildings on the lower side, which are connected with it. These buildings will be used for engine and boiler rooms.

The roof is of the style known as sawtooth. The length of each tooth is forty feet and the rise is ten feet. In the face of these teeth are set windows. These, with the large windows on each side of the building, will give plenty of light for the carrying on of the work.

On the side of the building a suite of offices is being constructed. It will consist of a general office, three private ofiices, drafting room, directors' room and lavatories, and will occupy a space 100x20 feet in size. In another corner of the building is a space twenty feet square, which will to be used for car washing.

The construction of the floor is novel and gives promise of great durability. The natural earth floor was first rolled well, and after this a 6-inch layer of tar concrete was laid upon it. This concrete is formed of cinders mixed with tar instead of cement and is absolutely waterproof. On top of this planks averaging 8 inches in width and 3 inches thick and tongued and grooved are laid together. These, too, are covered with tar. Tongued and grooved maple flooring is laid on this foundation, making a floor that is proof against dampness.

Due to transposition of cuts in last week's issue of the Motor World, the $5,000 Locomobile was made to appear priced $3,000. Both cars are good values, but there has been no reduction of $2,000 as the transposition might convey.

MITCHELL'S DARING MOVE

Decide to Meet the Horse on Common Ground—Ready to Assume Contracts.

Probably the most satisfactory and far-reaching evidence that the commercial motor car has seriously entered the industrial arena as an actual rival of the horse is contained in the move made this week by C. P. Skinner, manager of the Mitchell Motor Vehicle Co., of New York, which concern is unique in that it devotes itself wholly to the commercial car.

In his efforts to induce the big manufacturers and merchants to adopt the more modern means of transportation, Mr. Skinner has invariably been met by that succinct Missourism, "Show me." He met with it so often that he determined to show them in the most convincing fashion—that of meeting the horse on common ground.

As is fairly well-known, very many of the big establishments employing scores of horses and wagons are not the owners thereof. They are the property of contracting truckmen who supply and care for the animals, wagons and drivers and do the trucking for the firms for a stated sum per year. And, in brief, this is exactly the idea which the Mitchell Motor Vehicle Co. proposes to follow. They will furnish the motor vehicles and the drivers and take care of them.

It is a bold but convincing move that seems to leave absolutely no room for skepticism of any sort. The merchants who have been doubtful about the superiority of the motor, or who were disinclined to make a large investment in motor wagons, have had the way cleared for them.

Frayer-Miller Gets New York Garage.

The Frayer-Miller Motor Car Co., New York, has leased the Thomas salesroom and garage at Forty-ninth street and Seventh avenue, now occupied by H. S. Houpt. They will take possession early in the spring, when Houpt removes to the new Thomas building, now being erected at Sixty-second street and Broadway.

Changes in Cleveland.

The Cleveland branch of the Hartford Rubber Works Co. has been removed from 77 Bank street to 1831 Euclid avenue, nearer the automobile center of the city. The former manager, George Ostendorff, has been transferred to Buffalo, having been succeeded by H. R. Anderson, of Hartford.

Rose Will not Close Branch.

The Rose Mfg. Co., makers of the Never-out lamp, have decided to continue their branch at 107 Chambers street, New York. This means that the arrangements for giving the Eastern agency into other hands have been annulled.

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1906

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CADILLAC 30 H. P. Touring Car,	2,500 CADILLAC
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The Show of Independence.

Probably nothing more happily described the progress of the American industry at those periods of twelve months that were marked by the successive shows held in New York than the characterizations which the Motor World applied to them on the occasion of the last one, viz.:

1903—The Show of Promise.

1904—The Show of Progress.

1905—The Show of Achievement.

And no term will better describe the present state of the industry than—

1906—The Show of Independence.

The American industry is now full grown. It is not mere vainglory to say that it no longer looks to France or Germany or to any other country for hope, faith, charity, or inspiration. It has assimilated all that Europe was able to teach, it has thrown back its shoulders, and standing squarely on its own feet and relying on its ideas, and with exportations nearing the three million mark, America no longer asks odds of any nation. It is independent of all of them.

The long list of American cars that run just as smoothly, just as noiselessly and endure as well as any foreign car has lengthened greatly during the twelve months, and it is a fact that these cars are simpler, easier to operate, easier to care for and easier to repair than any foreign car and that they require less repair.

When price is considered, there is two and three times the value in the American car that there is in the imported car; indeed, it is fair to say that the domestic industry has reached that point when the purchase of a foreign car may be said to be merely an indulgence—the indulgence of wealth.

It gives the very wealthy a chance to have something that his neighbors cannot possess—that vicious spirit of rivalry which exists in the society of our big cities to a marked extent.

The show will emphasize what the exhibition of last year clearly indicated—that there is actually no sound reason why any American should purchase a foreign built car, unless he wants a special one, and then it may be added, if he would pay the American manufacturer as much as he pays the foreign one it could be obtained right here.

It would be odd indeed if the American designers and mechanics, who evolved and produced so much of the machinery that has made the foreign car possible, could not, when they applied themselves to the task, best produce the wares the machinery was designed to produce. They have done that very thing and the shows of 1906 will serve to convince the world of it.

Passing of "Automobile."

Although it may not strike the average person as being noteworthy, yet it is an indisputable fact that the passing of the automobile has become a present day reality. Not that the mechanically propelled vehicle has run its gamut of popular favor and has accomplished its need of usefulness, not that it is to cease to be an important factor in the history of the world, and a part of the essential equipment of the business universe, but that the automobile as such is ceasing to be, and in its place is coming the motor car.

The vehicle of mechanical auto-propulsion has been in the course of existence, by turns, a horseless carriage, a horseless vehicle, a motor vehicle, motor carriage, auto-vehicle, auto-car, and just plain "auto"—save the mark!—besides being an automobile. In addition to these, it has been graced with a host of purely general appelations relating to its motive power, its analogy to the locomotive, its imitation of some other type of machine, or the name of its maker. In England, they have dubbed it "motor" and say it with challenging emphasis. In France, they are more anxious for the thing and less for the name, and so automobile it remains.

In this country, on the other hand, they are profoundly disturbed lest they get behind the times, and so it is becoming a motor car. Of the comparatively few manufacturers who tell their occupation in the name of their firm, fully one-half subscribe themselves as being motor car makers, and qualify the noun according to taste. Among the users, talk of automobiles is in the wane, and talk of motor cars is on the increase. To be sure, there are still to be automobile shows in abundance, but it is a curious fact that their exhibits will be composed largely of motor cars.

Treading on Dangerous Ground.

While other statesmen have handled the subject with gloves, Governor Stokes, of New Jersey, in his annual message to the legislature, is frank in dealing with the so-called "automobile question" and in advocating the now popular trend toward revocation of licenses. He states in this exact language why he would have enacted a law imposing such a penalty:

"It would deprive the chauffeur of his means of livelihood and the pleasure driver of his means of recreation."

Although not usually so plainly stated, it is well-known that this is the underlying idea of all such enactments or suggested enactments. It is an idea that cannot be too soon put to the test of the highest court in the land. We have opposed it from the beginning and will continue to oppose it until that test is applied. It is a highly dangerous precedent in a republic in which "life, liberty and happiness" to all is a constitutional guarantee.

If it is possible legally to deprive the chauffeur of his means of livelihood and to

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render useless a certain form of property that contributes to the owner's happiness, the step having been made easy, why will it not become legal to deprive other workers of their tools of trade and other owners of the use of other property?

Dodging that question should not be made easier than dodging the undoubted fact that every citizen is entitled to "life, liberty and the pursuit of happiness," which includes the inalienable right to use the public thoroughfares without let or hindrance, so long as he is free to enjoy it. There is a place for the malfactor. When he is not confined in that place his right to earn a living and his right to the free use of his personal property cannot, in our opinion, be abridged ever so slightly. That principle is worth fighting for.

Awkwardness to be Overcome.

Apart from the constant demand for improvements in minor detail and the specific needs of change which are peculiar to but one or two types of machine there always is one supreme problem which is very obviously "next" on the calendar of the motor car designer. One time it was the transmission, then, perhaps, it was something in relation to the distribution of the gases in the motor, then it was the delineation of the body. Now, the thoroughly rational type of side entrance body having for all time displaced the clumsy disposition of the rear entrance in all styles of cars, there remains for final settlement the troublesome matter of so arranging the mechanism of control that the driver's seat will be equally accessible from either side, and yet simple and easy of access under all circumstances.

The disadvantage of the present arrangement as found upon all cars, practically speaking, whether of the touring or runabout class is that in order to reach his seat the driver must enter the car from the opposite side. This is made necessary from the fact that the steering wheel lies rather close to the seat itself, and that the emergency and speed levers effectually block the entrance and egress of any but an accomplished acrobat from that side of the car. In many cases as well, the step on the driver's side is encumbered with tool or battery boxes, and thus is made useless for its basic purpose. In certain instances where the entrance of a normal individual from that side would be quite possible ordinarily, the emergency brake lever when applied, as indeed it always should be when the machine is left at rest, swings down into a diagonal position, forming a gate across the otherwise free passageway.

In the larger types of car, which are most frequently driven by the "hired man," who retains his seat so long as the machine is in service, this is of comparatively slight importance, save that in case of mishap, or the necessity of his dismounting to start the motor, the passenger in front must fain submit to having a person of "lower caste" crawl across his or her lap with clumsy grace. In the case of the runabout or light car, on the other hand, where the driver usually is the host as well, it becomes his duty to assist his passenger into the seat, and, having adjusted the robes, to climb over to his own position contorting himself with the best possible grace in order to dodge in behind the wheel. Another point which militates very distinctly against the present arrangement in nearly all machines, is that since the common custom of the day dictates the placing of the control upon the right side of the machine, and the rule of the road indicates, no less strongly than the traffic regulations of most large cities dictate, that the car when brought to rest shall have its right side to the curb, both passenger and driver must walk around to the outside of the car in order to clamber in.

It is comparatively easy to suggest some means for obviating the difficulty and awkwardness of the arrangement, but the actual burden of final eradication must rest with the makers, and, as a matter of fact, the problem is less easy of solution than it seems. Thus, the placing of the mechanism of control on the left side of the machine, which has frequently been tried, would do away with but a portion of the evil, while the other alternative of placing it in the centre is readily to be discarded as forming a barrier between the occupants of the driver's seat. The use of a tilting steering post is of distinct advantage, but has no effect upon the clearing of the entrance from the driver's side, as it fails to effect any change in the position of the outside levers. Probably the most obvious solution of the difficulty from the viewpoint of present standards of manufacture would be to use a tilting steering post in conjunction with side levers set well back, an emergency lever of the "pull up" type and a clear step.

The motor car of the day is a finished and elegant mechanism, capable of performing its requirements with credit to itself and its maker at all times. Yet it has its faults, both individually and as a class, and of these the most offensive and inclusive, the one most to be deprecated, is this matter of the entrance to the front seat. Most assuredly, it is the next problem to be taken up in the order of refinement.

Accident that Points to a Moral.

As an illustration of the profound extent of the knowledge possessed by even the most erudite scribe regarding the internals of the automobile, there may be cited the descriptions blazoned forth by two of New York's best dailies, of an accident that occurred early in the week. The "chef devver" of the two is the following:

"Mrs. Blank was run over by an automobile yesterday afternoon as she stepped off a surface car at Broadway and Seventieth street. The machine passed over her and a hot coal from the carburettor dropped on her dress setting it on fire. In a moment her entire clothing was aflame. The driver of the machine instantly stopped and, running back with rugs from the car, put out the blaze." The second account given to the public under an aegis that prides itself highly upon the accuracy of its news and never lets people forget that fact, stated that the "flames from the carburetter were responsible for the fire."

What actually happened, as a matter of fact, was that the woman's dress was set afire from the exhaust. It forms a striking commentary, not alone on the deep ignorance of the average scribe in this respect, but likewise that the position in which the end of the exhaust pipe is placed is capable of doing considerable damage under propitious circumstances. Those who have all along advocated a change in this respect to a horizontal position some distance from the ground may now add another and somewhat substantial support to their contention. Raising the exhaust so that it will not impinge either directly or indirectly against the road surface may be preventative of other things than dust raising.

Someone who evidently never tried it, tells the motorist that when he has had the misfortune to lose the starting crank, the best and only way for him to restart the motor is to put the gears in the low speed, switch on the spark, and then push the machine along the road until it starts. In most machines, the low gear gives the motor so great a leverage over the driving wheels that is is very nearly impossible to stir them when the clutch is in. The high gear should be used instead, but the motorist should be ready to pull out the clutch at the first "cough," or else he may be left standing all alone in the middle of the road.

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FOR THE FLORIDA CARNIVAL

22 Nominations for the 27 Events—A. G. Vanderbilt Enters a Motor.

It is now definitely known who and what will constitute the magnets to attract winter boarders to the Florida cities at the forthcoming Ormond Beach carnival, January 22 to 27. As disclosed by the official entry list which closed Tuesday night, there are twenty-two cars in all, twelve of which are from abroad. Although the names of W. K. Vanderbilt, Jr., E. R. Thomas and other prominent American motorists were prominently linked with the affair in the advance press reports they are notably absent from the official list.

With 27 events and but 22 entrants it is plain that there will be no crowding on the sands. "Headliners" will predominate; stock cars have evidently been deemed of small importance. It is true that one stock car event, and one only, has been provided, but the entrants in this are the products of only two factories.

In the widely advertised "two miles a minute class" the speed qualities of the cars entered are unknown. The 250-horsepower special of A. G. Vanderbilt, of which nothing practically is known; the promised 200-horsepower Darracq, which has not yet arrived, the 110-horsepower Christie, a 100-horsepower Darracq, a 90-horsepower Thomas, a 110-horsepower F. I. A. T. and a new Stanley steam car make up the entrants. A Jacksonville publication has taken upon itself the task of conducting a voting contest to decide the most popular girl in Florida. Like a May queen in Central Park she will "crown" the victor in this class with a gold wreath, but as most of the probable winners are already married this banishes any thought of possible romance growing out of the result.

Following are the entries received up to the time of closing the list on Tuesday night:

Car.	H. P.	Cyl.	Nation.	Owner.	Driver	Events.
Special	250	8	United States	A. G. Vanderbilt	Sartori	11
Darracq	200	8	France	Darracq et Cie	Hemery	9
Fiat	110	4	Italy	Hol-Tan Co.	Lancia	11
Fiat	110	4	Italy	G. W. Young	Fletcher	11
Fiat	110	4	Italy	Hol-Tan Co.	Cedrino	8
Christie	110	4	United States	W. Christie	Christie	6
Napier	100	6	Great Britain	S. F. Edge	Earp	9
Ford	100	6	United States	Henry Ford	Ford	3
Darracq	100	4	France	A. L. Guiness	Guiness	11
Thomas	90	6	United States	C. A. Coey	Coey	3
Mercedes	90	4	Germany	J. R. Harding	Harding	6
Napier	80	4	Great Britain	Napier Co.	Hilliard	4
Darracq	80	4	France	Darracq et Cie	——	3
Darracq	80	4	France	Darracq et Cie	——	5
Daimler	45	4	Great Britain	English Daimler Co.	——	3
Wayne	45	4	United States	Wayne Auto Co.	——	1
Wayne	45	4	United States	Wayne Auto Co.	Kull	5
Reo	32	4	United States	R. E. Olds	Wurgis	5
Fiat	30	4	Italy	Hol-Tan Co.	Cedrino	5
Pierce	30	4	United States	J. E. Bristol	Bristol	1
Stanley	30	Steam	United States	F. E. Stanley	Stanley	9
Stanley	30	Steam	United States	F. E. Stanley	——	1

One Hundred Miles for Minneapolis $2,000 Trophy.—George W. Young, New York, 110 h. p. 4 cylinder car; C. A. Coey, Chicago, 90 h. p. 6 cylinder car; S. F. Edge, London, 80 h. p. 6 cylinder car; Hollander & Tangeman, New York, 110 h. p. 4 cylinder car; J. R. Harding, Boston, 90 h. p. 4-cylinder car; Alfred G. Vanderbilt, New York, 250 h. p. 8 cylinder car; Walter Christie, 110 h. p. 4 cylinder car; Napier Motor Co., Boston, 80 h. p. 4 cylinder car; English Daimler Co., New York, 45 h. p. 4 cylinder car; A. Darracq & Co., Paris, 200 h. p. 8cylinder car; A. L. Guiness, London, 100 h. p. 4 cylinder car; A. Darracq & Co., Paris, 80 h. p. 4 cylinder car.

One Mile for Dewar Trophy.—A. L. Guiness, Dublin; A. Darracq & Co., Paris; Alfred G. Vanderbilt; Ford Motor Co., 105 h. p. 6 cylinder car; Hollander & Tangeman; S. F. Edge, London, Hollander & Tangeman; Stanley Motor Car Co., Boston, Mass.; 20-30 h. p. 2 cylinder car, George W. Young.

Two Miles a Minute Race.—Alfred G. Vanderbilt, Walter Christie, A. Darracq & Co., A. L. Guiness, Ford Motor Co., Hollander & Tangeman, Stanley Motor Car Co., C. A. Coey and George W. Young.

Five Mile Open Championship.—Hollander & Tangeman, S. F. Edge, Stanley Motor Car Co., A. L. Guiness, A. Darracq & Co., Alfred G. Vanderbilt, George W. Young.

Ten Mile Open Championship.—Same as in five mile.

Fifteen Mile Open Championship.—S. F. Edge, Hollander & Tangeman, A. L. Guiness, A. Darracq & Co., Walter Christie, Alfred G. Vanderbilt, George W. Young.

One Mile Heavyweight Championship (gasolene).—Hollander & Tangeman, George W. Young, Alfred G. Vanderbilt, Walter Carlisle, A. Darracq & Co., A. L. Guiness, J. R. Harding, S. F. Edge.

Five Mile Heavyweight Championship (gasolene).—S. F. Edge, J. R. Harding, A. Darracq & Co., Walter Christie, A. G. Vanderbilt, George W. Young.

Ten Mile Heavyweight Championship (all powers)—George W. Young, Hollander & Tangeman, Alfred G. Vanderbilt, A. L. Guiness, J. R. Harding, Stanley Motor Car Company, S. F. Edge.

Mile Middleweight Championship (gasolene).—Hollander & Tangeman, 24-30 h. p., 4 cylinder; A. Darracq & Co., 80 h. p. 4 cylinder; Reo Motor Car Company, 32 h. p., 4 cylinder car; Wayne Automobile Company, 40-50 h. p., 4 cylinder car.

Five Mile Middleweight Championship (gasolene).—Same entries as above.

Ten Mile Middleweight Championship (all powers).—Hollander & Tangeman, Stanley Motor Car Company, A. Darracq & Co.

The Stanley steam car is the only entry for the one and five mile steam car championships.

The only entry in the ten mile Corinthian championship and the ten mile Corinthian handicap, for amateurs only, is A. L. Guiness.

Ten Mile Open Handicap.—George W. Young, Hollander & Tangeman, J. R. Harding, English Daimler Company, Wayne Automobile Company, Napier Motor Company, Reo Motor Car Company.

Fifteen Mile Price Handicap (for American touring cars, fully equipped).—Stanley Motor Car Company, Wayne Automobile Company, J. E. Bristol, Brooklyn, 30 h. p., 4 cylinder car; Stanley Motor Car Company.

Thirty Mile Free-for-All Championship (for American built cars).—Stanley Motor Car Company, Alfred G. Vanderbilt, Walter Christie.

Baltimorean Gives Three Cups.

J. H. Friedenwald, a wealthy Baltimorean, has given out that in order to create an interest in automobile racing in that locality he will give three valuable prizes to be competed for by stock touring cars. He proposes to give one cup for a race of touring cars from Baltimore to Washington and return; another for a race from Baltimore to Gettysburg and return, and a third for a race from Baltimore to Frederick and thence to Hagerstown and return. The time of holding the events he leaves with the club willing to take charge of arrangements. Mr. Friedenwald stipulates that the cars must each carry five passengers and there must be five or more cars in each event. The contests will be more in the nature of endurance tests than speed events, the trophies to be awarded to the car making the best allround showing. He will supply timers, etc., at the different points, and the autombilists will have no expense except the running of their machines.

Waco Cries for Licenses and Lamps.

The Waco (Texas) Automobile Club decided to ask the city authorities to adopt a license system; to compel each owner to number his machine plainly, with illuminated letters at night, and to regulate the speed at which cars may be driven on the streets. The officers elected are: President, W. W. Cameron; vice-presidents, W. B. Hays and Walter V. Fort; treasurer, W. W. Seley; secretaries, Frank Kirksey and M. T. Biel; captain, R. T. Dennis; lieuten-

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Possibilities of Motor Development

With the marked increase in favor which is being accorded the two-cycle principle at this time, a question naturally arises as to the relative practicability of the combined two and four cycle type, which was exploited at the Chicago Show nearly a year ago. The utility of the four-cycle engine is now beyond question, the advantages of the two-cycle engine are manifold and in many ways recommend it more strongly for motor car use than the more common type, and, moreover, it seems now to bid fair to gain that material advantage which can come only when it is given the attention of a number of different designers each approaching its problems from his own independent standpoint. Hence, the query as to the advantage and possible practicability of a combination of the two types in an effort to eradicate the ever troublesome difficulty of the transmission and change speed mechanism.

Basically, the characteristics which differentiate the two are, in the four-cycle type, an impulse every fourth stroke of the piston, a period of induction which lasts during an entire stroke, an equal period of compression and a ratio of expansion which takes its limitations only in accordance with such purely external considerations as govern the installation of the motor in its car. In the two-cycle type, on the other hand, there is an impulse every second stroke, an extremely brief period of induction during which the charge is admitted into the cylinder under pressure due to a previous compression, a period of final compression which is equal in duration to the period of expansion, and a ratio of expansion which is limited by the necessity of exhausting the contents of the cylinder to atmospheric pressure before the piston has reached the end of its out stroke. From the standpoint of efficiency, there is a similar contradiction of advantages, for while the four-cycle type has, in its best development, the highest thermodynamic efficiency of any heat engine, and the corresponding measure of the two-cycle type is considerably lower, on account of the limited ratio of expansion, the mechanical efficiency of the former is lower than that of the latter by a considerable amount because the internal absorption of power is continuous in both cases, while the number of impulses in the second is twice as great as that in the first. Thus the two-cycle motor, while in theory nearly twice as powerful per pound weight, or per cubic inch of cylinder capacity is more wasteful of fuel than the other type. And, finally, it is to be noticed that the two-cyle type, in its present state of development, is not susceptible of so great a variation in speed and power as is the other, and that in general it is not capable of being run at so high a speed, which is not, however, of great moment to the law-abiding citizen.

The scheme of the combined motor, is merely that of utilizing the two-cycle principle whenever the demand for power is in excess of the normal, as for instance, in starting, and in hill climbing, as well as for a more even driving effort at the rear wheels, while for all normal driving at medium and high speeds, the more economical four-cycle would be adhered to. In other words, supposing for the moment that the power per cycle were the same in both cases, then for the same total output, the motor would turn but half as fast when two-cycling as when running four-cycle. It is a matter of fact, of course, that the relative speeds would not vary quite in the ratio of two to one, but they would approach it, and would in some cases aproximate it pretty closely. In this way, by combining and overlapping the speed ranges of the two different cycles, a machine would be obtained in which the possible variation of speed would be in excess of any machine yet constructed. Also, the fact that in the lower ranges of speed, the power would not be diminished materially and the efficiency, though lower than that at high or normal speed, would still be greater than that which is obtained from the four-cycle type alone when running under throttle control, should militate in favor of the arrangement.

From the purely mechanical standpoint, there should be little hindrance to the carrying out of the scheme. Although the commonest form of the two-cycle motor is valveless and depends for the distribution of the gas upon the action of the piston in uncovering ports in the cylinder walls at the proper time, the same action could be obtained by the use of valves; in which case, all that would be necessary to effect the change in the cycle would be to cause an alternation in the actuation of the valves, either by the introduction of a different set of cams, or by any other convenient mechanical means at hand. In the one case, the supply of gas would be drawn directly into the cylinders from the carburetter, while in the other it would be taken first into the crank case where it would be compressed in the manner common to two-cycle machines, and then forced into the cylinders afterward. In manipulation, the control of the motor would not be unlike that of either type, the handling of the gas and ignition being unaltered by the change in cycle, and in all other respects, the motor would be quite similar to the prevalent types of machine except that it would have a duplicate set of valve gears, and that this would necessitate an additional lever to enable the driver to alter the distribution.

Other things being equal, this last clause would seem to constitute the chief disadvantage of the system, inasmuch as it would involve the encumbering of the motor with an amount of mechanism which is now entirely unnecessary. On the other hand, by this very means, the car itself would be rid of the necessity of a change speed gear, so that barring a single clutch, there would be no mechanism other than that of the direct transmission of the power from the motor to the driving wheels. This, then, might be taken as an advantage which would so offset the disadvantage of the increased mechanism of the motor, and in general increase the simplification of the type of car as a whole, that the drawback would be lost sight of.

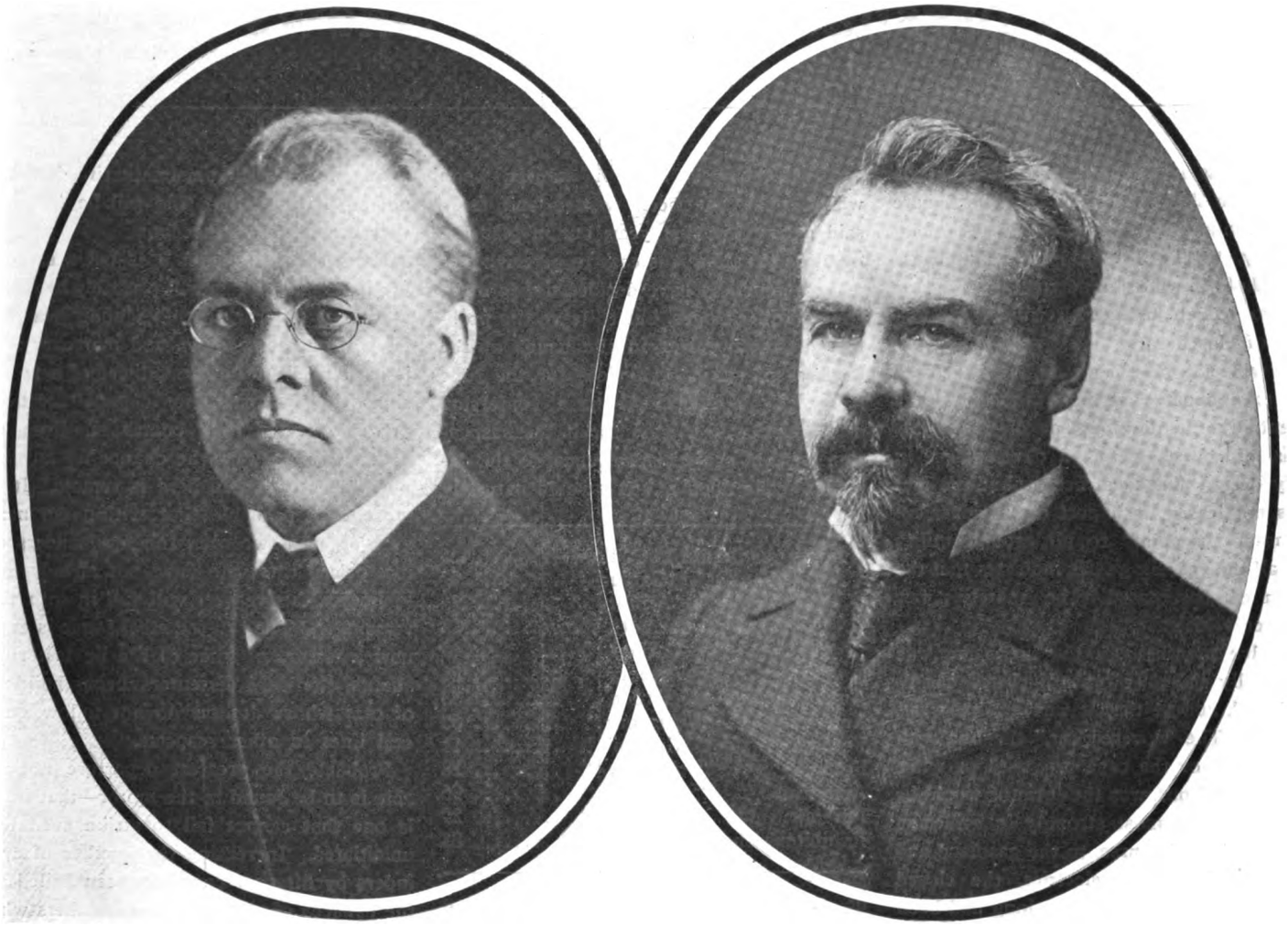
Up to the present time, the motor car manufacturers, who comprise the only class of gas engine builders who are working for a variable speed unit, have contented themselves in the use of either one or the other of the two distinct types. Both are at present passing through the refining fire, and doubtless each will emerge with enough of argument in its favor to warrant its use to a large extent. Whether or not the combined motor will come into any sort of favor, is as yet, merely a matter of conjecture. It is possible that each of the two types will be developed to such a point of sufficiency that the merging of the two will not be a necessity. And yet, it is not at all unlikely that when the present tide which trends visibly toward a multiplication of cylinders shall have had its run, and the market shall have fixed upon some one type of cylinder construction as a standard, that there will be a still manifest need of flexibility and efficiency which can only be served in the manner herein indicated. It is one of the "problems of the future" that cannot wholly escape the attention of the thinking man.

PAUL PRY.

The start of the tire trials of the Automobile Club of Great Britain and Ireland has been postponed from February 1 to February 15, the last day of entry being fixed for January 31. The speedometer and lamp trials, the conditions governing which were published in the Motor World last week, will be held at the same time.

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Marking a Twentieth Milestone



GEORGE W. BENNETT. THOMAS B. JEFFERY.

On January 19th, George W. Bennett, sales manager of Thomas B. Jeffery & Co., Kenosha, Wis., will round out an anniversary of uncommon interest, that of twenty years service in the Jeffery or Rambler interests.

It was in 1886 that Bennett first linked with the firm of Gormully & Jeffery, then and for many years engaged in the manufacture of bicycles. He traveled the Southern States for them until called to the Washington (D. C.) branch in 1889, of which he became assistant manager. Bennett saw the firm grow into one of the largest and most famous in the world. In 1895 he was transferred to Brooklyn, N. Y., where he managed the Rambler branch and made a reputation for himself. In 1899 Gormully & Jeffery disposed of their property to the American Bicycle Co.—the so-called "bicycle trust"—and Bennett, as one of the Rambler's valuable "assets," went with it, the following year becoming Eastern sales manager of the big institution, which comprised some 44 factories. When the "trust" was reorganized, Bennett was appointed Southern manager with control of all branch houses and travelers in the South. Mr. Gormully had died and Mr. Jeffery retired for a short spell, but the latter was too full of nervous energy to long remain in retirement, and in no time at all was again in the commercial arena building Rambler automobiles. In 1902 he called his old lieutenant to him and there he has been ever since, with duties and responsibilities greatly enlarged and in every sense Mr. Jeffery's right-hand man, his wide and ripe experience contributing in no minor degree to the impressiveness of Rambler success.

In whatever position he occupied, Bennett was never a negative quality. He is essentially a positive force who rather enjoys the sight of an obstacle and who believes in marching straight at it in preference to reaching it by devious detours. He is no "trimmer." He has the courage of his convictions and knows how to stand up for them. Bennett despises cant and bumptiousness, always keeps close to earth and does not try to force himself to believe that he cares a damn for the man who cares not a damn for him. He is indeed very much "on the level," is George Bennett, and true to those who are true to him.

Figures that tell a Story.

The city of Detroit, Mich., runs an "around the island" phaeton service at ten cents per passenger. An individual corporation has an automobile line over the same route charging twenty-five cents per passenger. For the year 1904 the phaetons carried 12,572, and the automobiles 11,903 passengers. For three months in 1905 the phaeton carried just eleven fares, while the other line had 12,853 passengers. The conclusion is obvious.

Where the Doctors Lead.

Newly-published statistics show that there are 21,524 cars in France, as compared with 17,107 in 1904, 12,983 in 1903, and 1,672 in 1899. Of these, 1,109 are used by doctors and pharmacists, 359 by manufacturers, 211 by distillers, brewers, etc., 254 by commercial travelers, 153 by agriculturists, a like number by tailors and the clothing industry, and 125 by metallurgists. In Paris itself there are 3,589 cars, and in Rhone 549,

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Foreshadows of the Shows

If there is any one feature of the exhibits at the two shows, those in Madison Square Garden and in the Sixty-ninth Regiment Armory, that will "stand out" and cause the beholder, whose mind runs back a year or two, to rub his eyes, it will be the display of closed cars.

It will not be surprising if the closed car predominates at both shows. It is essentially the development of the year. It is, of course, merely a development in body design and construction, but the fact does not lessen its import or its conspicuousness. It points to all around utility and all the year usage. It indicates that the motor car has ceased to be merely a fair weather vehicle.

Twelve months ago the limousine was practically the only type of closed car to be found, and at that it was not very numerous. The "covered car," the one with the canopy or the cape top, with or without a glass front, was the form of would-be all-weather car most strongly in evidence. This applies, of course, to the gasolene and steam vehicles. In electrics, the closed car in a diversity of patterns long had been before the public; and what makers of electrics had done those who deal with the other two powers have now done. The brougham, the landaulet, the victoria and the coupe all may be said to have developed during the year, while the limousine is now the rule and not the exception.

The body-makers have done their work well, too. While some of the bodies do no great credit to the vehicles to which they are fitted, generally speaking, they are magnificent specimens of the art, both in design and finish. Again speaking generally and of the tonneau type more particularly, body designs now follow two distinct and well-defined models—the straight-line and the "sea-shell" or curved line patterns, the latter having received an unexpected amount of favor.

In dealing with tendencies as a whole it is naturally impossible to separate one show from another. There is so much in common between the cars exhibited at both that it would be a profitless task to attempt to differentiate.

Suspension has been a subject upon which much has been written and more said during the past year, but in glancing over the situation it is easy to perceive that makers generally have decided not to make any radical changes, but to leave the problem of improvement in the hands of the devisers of auxiliary devices for the time being. It is equivalent to a confession of inferiority in a way, for if the suspension were in every respect equal to the demands made upon it there would naturally be no necessity of doing anything to supplement it. Whether from generally accepted present lines, which are nothing more or less than an enlarged edition of the horse-drawn carriage and truck, a suspension can be evolved that will meet all the requirements of the vastly different motor car, must remain a question for some time to come. Suffice it to say, considerable difficulty has been found in overcoming the plunging action of either the semi or the full elliptical spring and as the various forms of shock absorbers accomplish this more or less satisfactorily, it is easy to see that they will be very generally used. The adoption of the platform type of rear spring was an evident attempt to overcome this drawback, but judging from the few adherents it has maintained—less now than ever, it would appear—this end does not seem to have been reached. There can be no doubt that the business of manufacturing spring damping and buffing devices has before it an era of unexampled growth and prosperity. In one instance, at least, the buffer is advanced as a substitute for the pneumatic tire, but it is not at all likely that this will be followed very largely as a precedent.

From the suspension it is but a step to the frame and in this will probably be found a part of the car that has undergone the least amount of change, and moreover that is least likely to be the subject of new designs in future. The channel section pressed steel frame, comes so close to being universal that the chance for any innovation creeping in here is remote. It is more than probable that within the next year or even two even the few builders of low priced cars who have not already got in line in this respect will fall in with the remainder. The pressed steel frame is even now a feature of some of the lightest runabouts, the only dissenters being builders of cars whose designs do not follow general lines in other respects.

Probably the greatest departure noticeable is to be found in the motor—that is, it is one that cannot fail to strike even the uninitiated. Increasing the number of cylinders by fifty per cent. has been hailed as the panacea of all ills by some makers who have hitherto pinned their faith to the four cylinder motor. Of all the cars shown, it is safe to say that something between 70 and 80 per cent. will be equipped with what has come to be regarded as the standard—the four-cylinder type. But there will be enough six-cylinder models in evidence and a sufficient number of them will find purchasers to place a coterie of six-cylinder enthusiasts on the road during the coming season to demonstrate once and for all whether the advantages outweigh the disvantages. This can never be conclusive, however, for there will always be those who will pay the increased expense in order to have something out of the ordinary run, and in such hands it would appear that six cylinders constitute a feature that has come to stay. But that this number will be so limited as to make it unprofitable for the several makers who have listed such a model, to continue to do so, or that they will find it expedient to discreetly drop further progress in this direction in favor of a return to four cylinders at the end of

Number exhibitors both shows			433
" "	Garden	"	197
" "	Armory	"	236
" Makes cars at both shows			125
" " "	Garden	"	44
" " "	Armory	"	81
American cars at	Garden	"	33
American " "	Armory	"	63
Foreign " "	Garden	"	11
Foreign " "	Armory	"	18
American " "	Both	"	96
Foreign " "	"	"	29
Exhibitors showing	"	"	83

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the present year is a matter upon which it would be rash to prophesy.

Where the four-cylinder engine is concerned, it is noticeable that two distinct types have sprung up, varying with their power. Thus it will be readily noted that those rated 30 horse-power or under are still generally of the familiar twin cylinder type, but that over this there is a marked tendency toward the adoption of the independently cast cylinders. They are in evidence on such a number of cars that there is little doubt that this represents a feature of design upon which the majority are agreed. This may be explained by the greatly increased size of the castings brought about by the demand for more power. In some instances the present independent single cylinder castings are but slightly inferior in size and weight to former twin cylinders. None of the radical departures advocated here and there, such as the plan of offsetting the cylinders on the crank case, have apparently come in for any serious consideration, so that the motor as a whole will, with the exception of the differences just alluded to, enter upon 1906 in most respects the same as it was a year ago.

In the matter of valves there is little of novelty to record; the mechanically operated valve was already an established fixture a year ago and the automatic valve may now be definitely said to have passed beyond the ken of the automobile motor designer. There is still a divergence of opinion as to the proper location of the valves. A leaning toward placing them in the head is noticeable, possibly as a result of the effect that air-cooled designs have had upon the water-cooled engine. It has now become more or less general in the latter type to locate the valves on top of the cylinder, as in the Premier, and this has been adopted in numerous instances in the water-cooled type.

While the four cylinder motor predominates the field so largely the horizontal opposed type may be said to be holding its own, though it must be recorded that most of the makers of such machines have added four cylinder models to their line. Also somewhat of an increase in the use of the twin cylinder vertical type for runabouts and light cars, as evidenced by the Mitchell and Pope Tribune, is to be noticed. On the runabout the single cylinder is still adhered to in a few prominent instances, but there have defections rather than accessions to the ranks of its supporters.

Air cooling may be said to have found itself during the past year so that the leaning toward this factor of simplicity during the coming season will be represented by a much more extensive showing of cars of all types than has hitherto been thought possible. The present year really marks the advent in numbers of the modern touring car with an air cooled engine. The growth that the type has attained during the past year and particularly the conclusive demonstration of the fact that there appears to be no limit to the size of the successfully air-cooled motor, so far as the automobile is concerned, has once for all, put a quietus on those doubters who never expected to see the air-cooling win out, except in a very limited field sharply bounded by the restriction of low power. The building and successful running of an air-cooled engine rated at 100 horse-power—the Premier racer—as well as the marketing of the largest stock car of the type ever shown by a firm that has made a name for itself in this respect hardly calls for comment. This is the Frayer-Miller. There will certainly be more than a round half dozen of cars with air-cooled motors, but in every other respect the counterparts of the standard type of touring machine the world over, such as the Corbin and new Knox models. Upon these cars have been installed dummy radiators patterned after the water-cooled machines, which give them a most conventional appearance.

There is a marked tendency to take up the long neglected two-cycle engine which has hitherto had but one supporter, the Elmore, and develop it in the same manner that has brought success to other types, and its adoption by such a concern as the Olds Motor Works is an indication of great portent. Neither this nor the air-cooled type can be said to be sufficiently numerous to constitute a general trend—they are both comparatively new and both more or less novel by comparison, but they show such a marvellous growth, particularly in the case of the former, that they must be considered in the light of candidates for increasing favor.

In ignition, there is more and more inclination toward the use of the magneto, the high tension type now being very largely used on the more expensive machines. The construction of the magneto by a car manufacturer, as in the case of the Locomobile, is a noteworthy instance of the independence which is so widely manifest this year. Needless to say, the lower priced cars still adhere to the jump spark system.

What may be considered as portending the ultimate disappearance of the splash system of lubrication is to be found in the gradual, but none the less, certain increase in the adoption of the continuous feed pressure system for the lubrication of the moving parts of the motor. It is true, that so far this has been used in but a limited number of instances to the exclusion of the splash system, but it shows that there is a tendency in this direction.

Speed changing tendencies take the form of a desire to perfect the sliding gear type, and this has been carried out to such an extent that this form predominates. The planetary gear has neither lost nor gained ground; it is still used by those who have made a feature of it in the past, but its adoption for a heavy car with three speeds forward, as in the case of the Cadillac heavy touring car of last year, does not appear to have found any response in the designs of other builders. It will, of course, continue to hold its own where the runabout is concerned. The use of the selective system of gear changing has found new adherents and it is probable that it now largely exceeds in number the direct lever type.

The cardan shaft for final drive has come into pretty general use. It has now, with a limited number of exceptions, been extended to all types of car, from the very heaviest down to the light runabout. The exceptions to it take the form of runabouts or light cars that have been on the market for several years, using a single chain drive, and the highest powered cars with double

Where the Cars will be Found.

GARDEN

Autocar	Pope-Hartford
Apperson	Royal
Babcock*	S. & M. Simplex
Buick	Stearns
Cadillac	Stevens-Duryea
Cantano*	Studebaker‖
Columbus*	Thomas
Columbia‖	Vehicle Equipment*
Elmore	Waltham-Orient
Franklin	Walter
Haynes	Winton
Hewitt	Darracq
Knox	Rochet-Schneider
Locomobile	Clement-Bayard
Matheson	Decauville
Northern	DeDietrich
Olds	F. I. A. T.
Packard	C. G. V.
Peerless	Renault
Pierce	Panhard
Pope-Waverly*	Mercedes
Pope-Toledo	Gallia*

*Electric. ‖Electric and Gasolene.

ARMORY.

Acme	Moon
Aerocar	Moore
Ardsley	McCrea (elec.)
Austin	National
Auto-Car Equipment (gas & electric)	Pittsburg (elec.)
	Premier
American Mercedes	Pungs-Finch
Atlas	Queen
Ariel	Rainier
American Berliet	Rapid
Baker (elec.)	Rambler
Berkshire	Rauch & Lang (elec.)
Chadwick	Reo
Cleveland	St. Louis
Christie	Stoddard-Dayton
Commercial	Twyford
Corbin	Viqueot
Crawford	Wayne
Crown	Welch
Compound	White (steam)
Dolson	Windsor
Dorris	Wolverine
Duryea	York
Ford	Peugeot
Frayer-Miller	De Leon
Glide	Hotchkiss
Grout	Zust
Iroquois	Westinghouse
Jackson	C. G. V.
Johnson (steam)	Leon Bollee
Lambert	Brasier
Lane (steam)	Berliet
Lansden (elec.)	Mors
Logan	Napier
Lozier	Delauney-Belleville
Marmon	Martini
Marion	Panhard
Maxwell	Daimler
Mitchell	Spyker
Moline	Argus

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chain. In a measure it would even seem to be supplanting the single chain, as in the case of the Maxwell tourabout.

Of course, the general increase in the use of the anti-friction bearings, both of the ball and roller type, should not be overlooked. The adoption of one or the other of the two types has become general in all the more elaborate cars, and to a much greater extent than heretofore in those of less pretense.

Tentatively, and just stepping over the border by a small margin as if not to appear too radical, at least a few makers, among which may be cited the Lozier, the Rainier and the Cleveland, have paid heed to the plaint of the tire maker for larger wheels and these cars will accordingly be equipped, the first with 36-inch, the others with 34-inch size. But there is more in this than appears on the surface. The tire maker has placed himself on record as advocating the increased wheel diameter with a correspondingly larger tire as pointing the way to a large measure of relief from tire troubles and tire maintenance.

But it is a cure that comes high and in the opinion of the majority is a form of relief that may hold the promised ultimate lessening of the tire bill, though they are hardly willing to pay the price to obtain it.

In this connection, may be mentioned the most marked development that has been brought about—the general trend toward the mechanically fastened tire. While the clincher still retains its vogue and will doubtless constitute a very substantial percentage of all the tires turned out during the coming year, there are few makers who have not come to the conclusion that the time is ripe for the advent of a perfected mechanical fastening. Users generally have become reconciled to the fact that the non-puncturable, last-forever tire is an illusion that stands small chance indeed of ever assuming any more solid form and are content to put up with the weakness of the pneumatic tire in order to enjoy its advantages. But as long as the necessity for repairing is an ever present quantity, it may as well be robbed of as many of its terrors as possible. There is no chance of evading the issue; no choice but to make the repair or further damage the tire by riding it flat, so that the demand has been for means of facilitating the process as much as possible and bringing it more within the ability of one man to effect. Those makers who have had their ears to the ground have not been backward in detecting the approaching rumble and the result will be the presence of a greater number of mechanically fastened tires on the market during the coming year than ever before.

To revert to the mechanism temporarily, there is one very decided tendency connected with no part of the chassis in particular, but having a very important bearing upon all, and that is the importance of the role assumed by the study of the metallurgy of the car's motive power and support. The choice of the very best materials for every individual purpose—in no other way can maximum strength be combined with minimum weight, and it is something that henceforth will be made the subject of extensive study with a view to further refinement.

Functions During Show Week.

Saturday, January 13—8 p. m., opening of New York shows.

Monday, January 15—Meeting American Automobile Association racing board at Armory.

Tuesday, January 16—Meeting directors New York State Automobile Association at Armory; afternoon.

Meeting directors A. A. A. at Armory; afternoon.

Meeting Society Automobile Engineers at Hotel Grand, 8 p. m.; informal dinner at 6 p. m.

Meeting and election, The Motor and Accessory M'f'r's, Inc., Hotel Astor, 8 p. m.

Annual Meeting National Association Automobile Dealers, Hotel Victoria.

Wednesday, January 17—Open meeting for A. A. A. members at Armory, Wednesday afternoon.

Luncheon and entertainment Hyatt Roller Bearing Co., Harrison, N. J., at Waldorf-Astoria Hotel, 9 p. m.

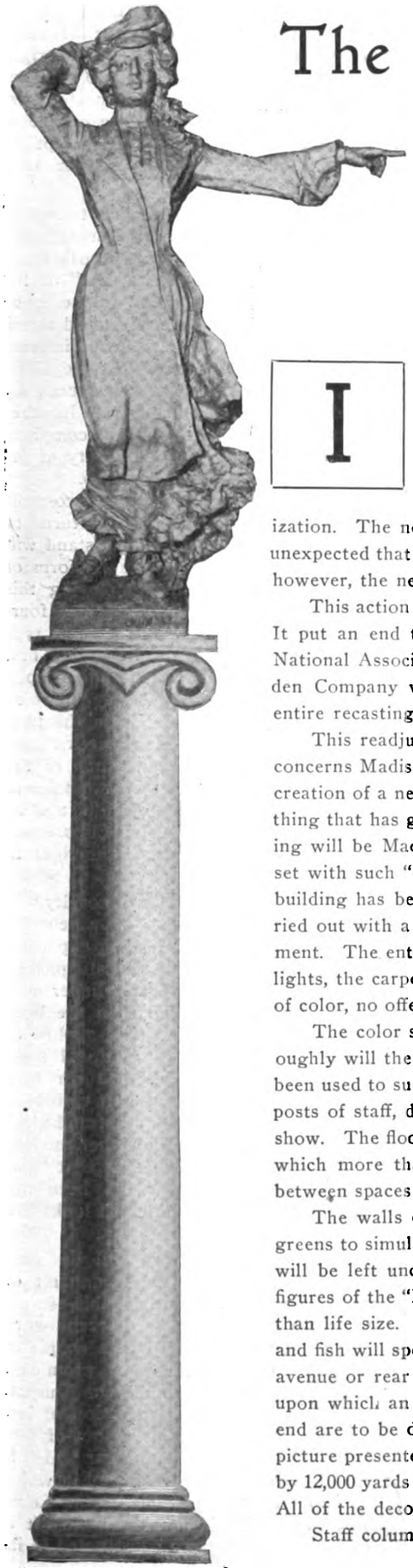
Meeting National Association of Automobile Manufacturers at Hotel Victoria, Broadway and Twenty-seventh streets, 8 p. m.

Saturday, January 20—Annual banquet Automobile Club of America at Waldorf-Astoria Hotel, evening.

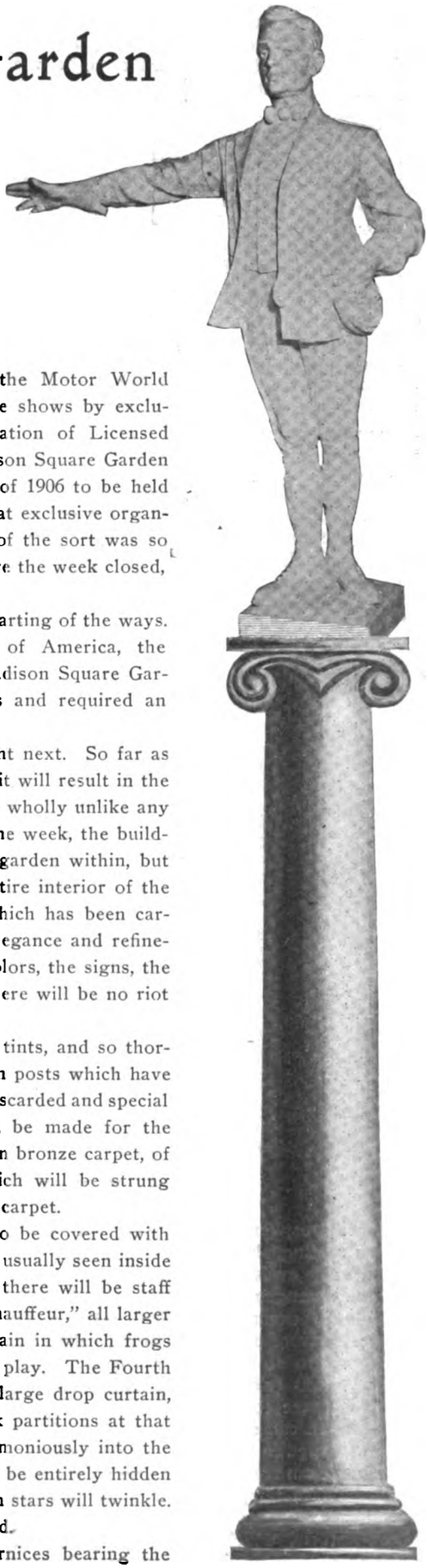
THOSE WHO WILL EXHIBIT AT BOTH SHOWS.

American Ball Bearing Co.
Anderson Spark Plug Co.
Aurora Automatic Machinery Co.
Auto Supply Co.
Badger Brass Co.
Baldwin Chain & Mfg Co.
Belden Automobile Transmission Co.
Bowser & Co., S. F.
Brown-Lipe Gear Co.
Briscoe Mfg. Co.
Byrne, Kingston & Co.
Charron, Girardot et Voigt.
Columbia Lubricants Co.
Continental Caoutchouc Co.
Continental Rubber Works.
Cramp & Sons' Ship & Engine Building Co.
Dac Automobile Supply House.
Dayton Electrical Manufacturing Co.
Diamond Chain & Mfg. Co.
Diamond Rubber Co.
Dietz & Co., R. E.
Duff Mfg Co.
Eastern Carbon Works.
Edmunds & Jones Mfg Co.
Firestone Tire & Rubber Co.
Fisk Rubber Co.
G. & J. Tire Co.
Gabriel Horn Mfg. Co.
Goodrich Co., The B. F.
Goodyear Tire & Rubber Co., The
Gray & Davis.
Hardy Co., The R. E.
Hartford Rubber Works Co.
Hartford Suspension Co.
Harris Oil Co.
Hatch & Brittain, Inc.
Herz & Co.
Hess-Bright Mfg. Co.
Hyatt Roller Bearing Co.
International A. & V. Tire Co.
Iron Clad Mfg. Co.
Judson & Downing Co.
Light Mfg. & Foundry Co.
McGiehan Mfg. Co.
Miller, Chas. E.
Morgan & Wright, Inc.
Mosler & Co., A. R.
National Carbon Co.
New York & New Jersey Lubricant Co.
New York Sporting Goods Co.
Ofeldt & Sons, F. W.
Oliver Mfg. Co.
Panhard et Levassor.
Parrish & Bingham Co.
Pennsylvania Rubber Co.
Prest-O-Lite Co.
Prosser & Son, Thomas.
Railway Appliance Co.
Remy Electric Co.
Renault Freres.
Republic Rubber Co.
Republic Rubber Tire & Shoe Co.
Rose Mfg. Co.
Rubay, Leon.
Sibley & Pitman.
Shelby Steel Tube Co.
Spicer Universal Joint Mfg. Co.
Splitdorf, C. F.
Springfield Metal Body Co.
Sprague Umbrella Co.
Standard Welding Co.
Steel Ball Co.
Standard Roller Bearing Co.
Timken Roller Bearing Axle Co.
Trade Advertising & Publishing Co.
Twentieth Century Mfg. Co.
Veeder Mfg. Co.
Warner Instrument Co.
Warner Gear Co.
Webb Co.
Wheeler Mfg. Co.
Whitlock Coil Pipe Co.
Whitney Mfg. Co.
Witherbee Igniter Co.
Willis Co., E. J.
Wray Pump & Register Co.

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The Show in the Garden



TOTAL NUMBER EXHIBITORS, 197

CARS, 44; OTHER THAN CARS, 153

IT was at just this time one year ago that the Motor World electrified all who had to do with automobile shows by exclusively publishing the news that the Association of Licensed Automobile Manufacturers had secured Madison Square Garden for a term of years and that the exhibition of 1906 to be held under the auspices of what may be termed that exclusive organization. The news created a tremendous sensation. A move of the sort was so unexpected that it was not generally credited at the time. Before the week closed, however, the news was fully confirmed.

This action of th A. L. A. M. marked a distinct and visible parting of the ways. It put an end to the alliance between the Automobile Club of America, the National Association of Automobile Manufacturers and the Madison Square Garden Company who jointly had conducted the previous shows and required an entire recasting of lines and readjustment of affairs.

This readjustment will be made apparent on Saturday night next. So far as concerns Madison Square Garden enough is known to say that it will result in the creation of a new standard for industrial exhibitions. It will be wholly unlike any thing that has gone before, whether at home or abroad. For the week, the building will be Madison Square Garden on the outside, a Roman garden within, but set with such "chariots" as Roman never dreamed of. The entire interior of the building has been transformed to obtain this Roman effect, which has been carried out with a lavish hand, but always with an eye to quiet elegance and refinement. The entire scheme is one of harmonious blend. The colors, the signs, the lights, the carpets, the decorations, all will be in harmony. There will be no riot of color, no offense in contrast, no jarring, no discord of detail.

The color scheme will be white and gold with contrasting tints, and so thoroughly will the Roman effect be carried out that the round iron posts which have been used to support the chain barriers between spaces will be discarded and special posts of staff, designed in the prevailing style of architecture, be made for the show. The floors are to be covered by a specially woven golden bronze carpet, of which more than 6,000 yards will be used. The chains which will be strung between spaces will be bronzed to a tint almost like that of the carpet.

The walls of the short main entrance hall or lobby are to be covered with greens to simulate a forest effect, and no part of the buliding as usually seen inside will be left uncovered. Immediately inside the amphitheatre there will be staff figures of the "Poster Girl," the "Automobile Girl" and the "Chauffeur," all larger than life size. Under the "Poster Girl" there will be a fountain in which frogs and fish will spout water on which changing colored lights will play. The Fourth avenue or rear end of the amphitheatre will be covered by a large drop curtain, upon which an Italian garden scene will be painted. The box partitions at that end are to be draped to resemble columns, so as to blend harmoniously into the picture presented by that end of the building. The ceiling will be entirely hidden by 12,000 yards of torquoise blue bunting, in which 27,000 golden stars will twinkle. All of the decorations, including evergreens, will be fireproofed.

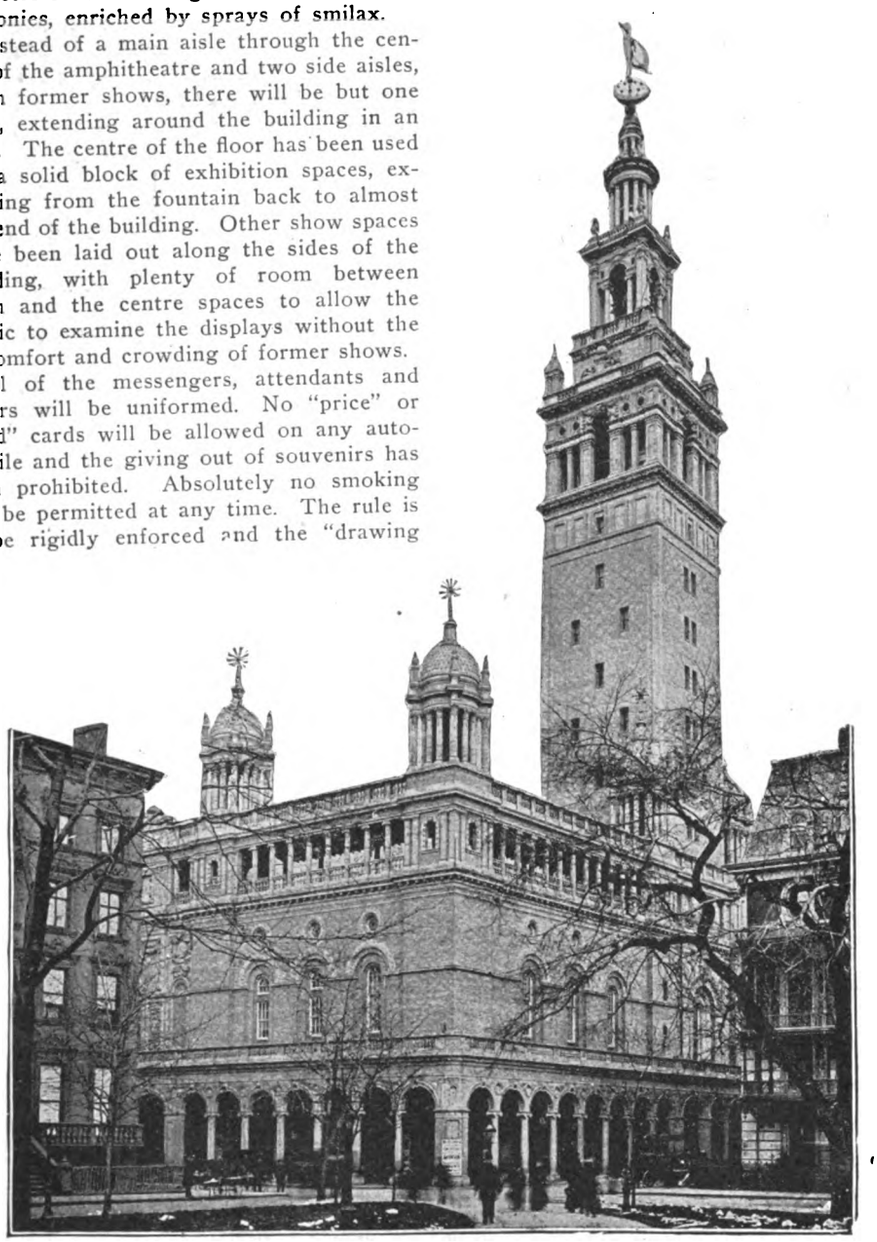
Staff columns placed ten feet apart will support classic cornices bearing the

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signs of each exhibitor. Thousands of electric lights will be placed along the edges of the cornices and new electroliers have been specially designed to do their part in illuminating the building. Silkoline between pilasters of white and gold will decorate the balconies, enriched by sprays of smilax.

Instead of a main aisle through the centre of the amphitheatre and two side aisles, as in former shows, there will be but one aisle, extending around the building in an oval. The centre of the floor has been used for a solid block of exhibition spaces, extending from the fountain back to almost the end of the building. Other show spaces have been laid out along the sides of the building, with plenty of room between them and the centre spaces to allow the public to examine the displays without the discomfort and crowding of former shows.

All of the messengers, attendants and others will be uniformed. No "price" or "sold" cards will be allowed on any automobile and the giving out of souvenirs has been prohibited. Absolutely no smoking will be permitted at any time. The rule is to be rigidly enforced and the "drawing



MADISON SQUARE GARDEN.

room atmosphere" of the show preserved. Horn tooting also has been tabooed.

Striking evidences of the completeness of the arrangements will be found in the telephone exchange, which will be the largest private one in the world, called into existence to do its part for a week. There will be 150 telephones in operation with long distance connections, so that any exhibitor can call up his factory, even though it be situated in the West. Sixty-five trunk lines will run from the building to the Madison Square telephone exchange, a larger number even than can be found at the Waldorf-Astoria, which is the largest private exchange in regular operation. Twenty-three employees and hello girls will be required to operate the exchange, in addition to the attendants at the various stands.

The credit for this great work—for it is a great work—rests with the A. L. A. M. Show Committee, George Pope, chairman; M. I. Brock and C. R. Mabley.

Of all the cars staged the one which is the nearest approach to a sensation and which will attract all comers for at least a look at its "innards" will be the new Northern four-cylinder car with its air control. In itself, the use of compressed air on the car is not a novelty as one maker or another has applied it to some purpose, such as the application of the brakes or the governing of the motor, during the past two or three years, but heretofore it has not been called upon to operate the clutch, gear changing mechanism and brakes all on one and the same machine. It will be the leverless aspect of the car that cannot fail to attract the eye accustomed to seeing the inevitable hand levers, generally at the driver's right hand, which have in the past two or three years been reduced to a minimum of two, but which appear to stand little chance of further reduction in the future except by the use of some such flexible medium as is employed in this case.

In its way the two-cylinder two-cycle Oldsmobile also savors of the sensational. Its adoption by the pioneers whose name it bears was one of the "startlers" of the season, and the car that led to the move cannot well fail of wide interest and attention, though it may serve to lessen interest in the new four-cylinder, four-cycle Oldsmobile, the largest car ever produced by that old and experienced concern. In other respects, too, the Olds line will be complete, runabout, wagonette and a diversity of delivery types serving to make it so.

In every case where the name two-cycle is mentioned the mind naturally turns to the Elmore people, and at their stand will be found not simply a revamped form of their well-known machine employing this type of motor, but as well a brand new four-cylinder car still fitted with the same type motor, and noteworthy as being the first quadruple engine of its class to be put upon the market. Because of the way in which the limelight has been cast upon the two-cycle motor during the last few weeks, quite as much on account of the stamp of the makers who are giving it their attention at the present time, there is sure to be a week long radiance pervading the Elmore exhibit; its makers have earned the right to smile.

Probably next in the order of novelty will come the air-cooled cars, of which the Knox has been so long a leading exponent, and the Knox exhibit will be distinguished by the first air-cooled, four-cylinder machine to be built throughout on the lines laid down by current design as applied to machines of the more conventional type, and, too, the largest air-cooled car ever in a regular stock model of four cylinders. With its imposing proportions, straight line body, "dummy" radiator and other modern trappings it is totally devoid of that "gingerbread" appearance that has been too much of an air-cooled failing. It looks like a real motor car.

Some of the cars shown will be noteworthy because of the slight amount of alteration has been found possible—something which argues a very different story from what it would have done a couple of years ago. One of the most prominent among these will be the Stevens Duryea, which is practically a reproduction of last year's type, yet is by no means out of date or behind the times. Another car which is practically unaltered in design and in which refinement only was possible, is the Locomobile, which also is notable in that it is equipped with a magneto constructed in its

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entirety by the makers of the car. Of the machines which have been altered to a greater degree, though not in a way which is readily appreciable to the layman, there will be the big four-cylinder Columbia, costing $5,000, the Pope-Toledo, the Pierce, the Thomas, the Packard, the Orient, the Peerless, the Apperson, have undergone considerable improvement in one detail or another, while the Royal and Haynes cars, counterparts of those which starred in the double elimination prior to the Vanderbilt Cup race last fall, are of new design, though each retaining its former characteristics,



GEORGE POPE,
Chairman Show Committee.

which substantially is true also of the Stearns.

Of the makers who have brought out large cars are the Autocar, the Cadillac and the Pope-Hartford, each of whom have added a four-cylinder model to its line.

The exhibit of electric vehicles will be very complete and will include, among others, a novelty in the way of an electric chemical fire engine, which is adapted to give smooth and reliable service under the rigorous conditions which such apparatus is expected to serve. The exhibit of the Columbia electrics will be, as usual, impressive not only in appearance but in variety. It will include practically every type of closed car to which the makers of gasolene vehicles have but just seriously turned their attention. The Pope-Waverly also has "come on" remarkably in this direction, as its exhibit will make plain.

No tire of repute, whether of foreign or domestic manufacture, will be found missing, and there is no lack of newness in the tires themselves in the means of attachment; in fact, the progress of the mechanical fastening will be made plain for the first time. The big house of Goodrich has been "won over" to that form of fastening and its "quick detachable" tire will at the show be demonstrated to the general public for the first time. The same is true of the Firestone pneumatic, the newest product of the Firestone whose solid tires long have been a byword. This Firestone mechanically fastened tire is so new, indeed, that many will see it at the show for the first time. The Perfected Dunlop fastening and the new ring or flange that permits the use of the Dunlop tire on any clincher



CHARLES CLIFTON,
President A. L. A. M.

rim is another recent and far-reaching development of no mean order. The Fisk and the Goodyear mechanically fastened tires were earlier or earliest in the field and require mention only in passing; their spurs are already won, so to speak. The Diamond, the G & J and the Morgan & Wright concerns still pin their faith to the clincher tire, though the Diamond holds a Fisk license and the other two are privileged to and actually are producing mechanical fastenings that are counterparts of that employed on the Perfected Dunlop. The Diamond Rubber Co. is, however, contributing four departures—a solid tire with a wire-mesh base, a wrapped thread Diamond with a flat thread, a double or diaphragm inner tube and a tire protector or removable tread which is made wholly of rubber and fabric and which, when applied, is held in place solely by inflation, without the use of beads or "shoe lacing." The Pennsylvania and Michelin adhere to the clincher type of tire, the former introducing a flat tread; the latter previously had a tire of this type.

In accessories there is nothing surprisingly new or startling. A birdseye survey of the list of accessory exhibits will quickly grasp the few real novelties, as, for instance, the Baldwin Chain & Mfg. Co.'s shock absorber, of the "House" spring recoil check, the principle of which is simple; it is enterely automatic, and, works by a spring contained in a steel cylinder attached to the axle and the body of the car. Besides the introduction of an eight-chime horn, the Gabriel Horn Co. also are presenting a shock absorber, the Foster, which is actuated by compression, a plunger in a cylinder containing oil furnishing the desired resistance. The Dayton Electrical Mfg. Co. have brought out the Apple automatic cut-out and voltmeter. Holley Bros. are presenting a new magneto in addition to its line of carburetters. Accessories like the cars, themselves, however, are rapidly settling into well defined standards, of which such as the Jones and Veeder speedometers and odometers, the Solar, Atwood and Gray & Davis lamps; Whitney, Diamond and Baldwin chains; Springfield, Sprague, Rands, King and London tops; B. & S. wrenches, Kingston carburetters, Timken, Standard and Hyatt roller bearings, Prest-O-Lite gas tanks, Midgley pressed



W. E. METZGER,
Vice-President A. L. A. M.

steel wheels, Briscoe and Whitlock coolers and radiators; Hill precision oilers, Truffault-Hartford shock absorbers; Hardy plugs and Splitdorf coils may be mentioned to better convey the meaning.

The Exhibitors and their Exhibits.

An alphabetical list of the exhibitors at the Garden Show, giving their location, and the nature of their wares:

M. F.—Main Floor.
E. P.—Elevated Platform.
F. T.—First Tier Boxes.
S. T.—Second Tier Boxes.
E. H.—Exhibition Hall.
Bs.—Basement.
Bl.—Balcony.
C. H.—Concert Hall.

A

Allers & Co., New York, Space 118, Bl and S. T.—Specialties.

American Ball Bearing Co., Cleveland, O., Space 97, E. P. and F. T.—Ball bearing axles, wheels, etc.

American Darracq Co., New York, Space 16, M. F.—Darracq touring cars.

American Electric Novelty and Manufacturing Co., New York, Space 176 C. H.—Electrical goods and self-starter.

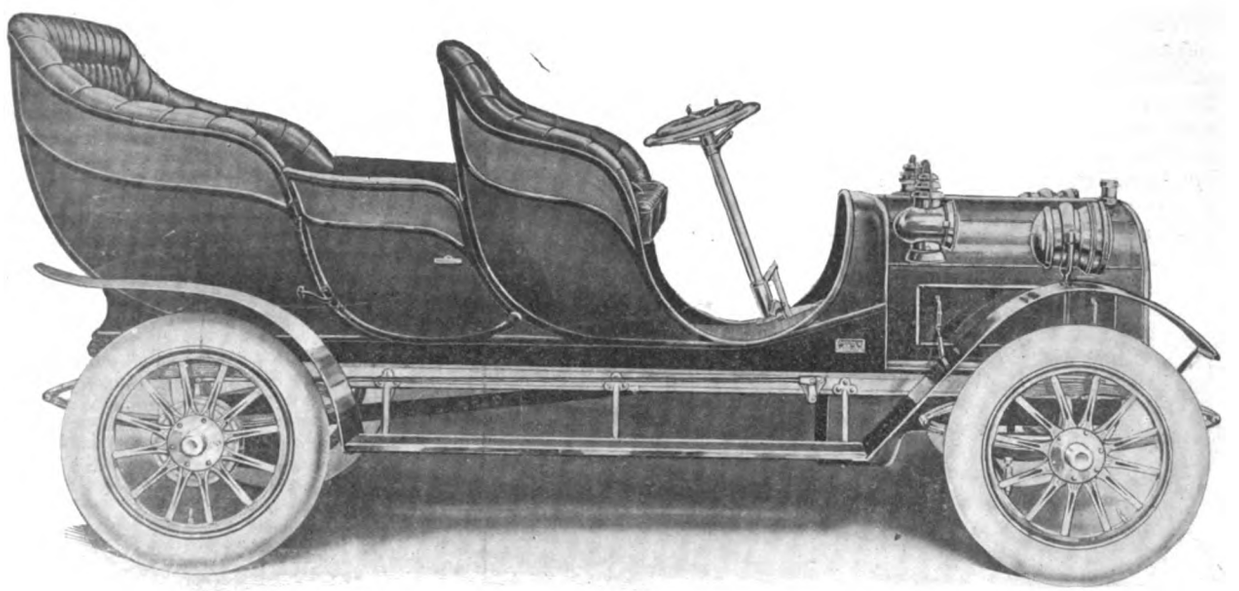
American and British Mfg. Co., Space 211, Bs.

Anderson Spark-Plug Co., Space 121, Bl and S. T.—Spark Plugs.

Apperson Bros. Automobile Co., Kokomo,

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One of the Semi-Sensational Cars



NORTHERN FOUR-CYLINDER CAR WITH AIR CLUTCH AND AIR BRAKE.

Ind., Space 1, F. M.—Apperson four-cylinder touring cars.

Atwater Kent Manufacturing Works, Philadelphia, Pa., Space 81, E. P. and F. T.—Electrical specialties.

Atwood Manufacturing Co., Amesbury, Mass., Space 91, E. P. and F. T.—Lamps.

Aurora Automatic Machinery Co., Aurora, Ill., Space 99, E. P. and F. T.—Thor Motorcycles and fittings.

Auto Brass and Aluminum Co., Flint, Mich., Space 119, Bl. and S. T.—Force feed oilers and parts.

Auto Coil Co., The, Jersey City, N. J., Space 101, E. P. and F. T.—Spark coils.

Auto Import Co., New York, Space 19, M. F.—Rochet-Schneider touring cars.

Autocar Co., Ardmore, Pa., Space 22, M. F.—Autocars, two and four cylinder models of improved type.

Auto Supply Co., The, New York, Space 126, Bl. and S. T.—Sundries and supplies.

Automobile, the, New York, Space 149, Bl. and S. T.

Automobile Top and Cover Mfg. Co., Inc., Space 215, Bs.—Tops.

B

Badger Brass and Manufacturing Co., Kenosha, Wis., Space 102, E. P. and F. T.—Solar Acetylene Gas Lamps.

Baldwin Chain and Manufacturing Co., Worcester, Mass., Space 63, E. P. and F. T.—Baldwin detachable and riveted chains, House Patent Recoil Check.

Barnes Gear Co., Space 156, Bl. and S. T.

Belden Automobile Transmission Co., Space 177, C. H.

Benford E. M., Space 206, Bl.

Billy, C., Space 116, Bl. and S. T.—Lamps.

Bowman Automobile Co., Sidney B., New York, Space 14, M. F.—Clement-Bayard cars.

Bowser & Co., S. F., Fort Wayne, Ind., Space 184, C. H.—Gasolene storage outfits.

Brennan Manufacturing co., Syracuse, N. Y., Space 89, E. P. and F. T.—Brennan motors and transmissions.

Briscoe Manufacturing Co., Detroit, Mich., Space 72, E. P. and F. T.—Radiators, fenders, etc.

Brown-Lipe Gear Co., Syracuse, N. Y., Space 60 E. P. and F. T.—Differentials, steering gears and sliding gear transmissions.

Bryne Kingston & Co., Kokomo, Ind., Space 67, E. P. and F. T.—Kingston automatic carburetters and mufflers.

Babcock Electric Carriage Co., Buffalo, N. Y., Space 34, E. H.—Electric vehicles.

Buick Motor Co., Jackson, Mich., Space 13, M. F.—Buick two and four cylinder cars. Space 48a, B. S.—Buick commercial vehicles.

C

Cadillac Motor Car Co., Detroit, Mich., Space 4, M. F.—Cadillac cars, one, two and four cylinders.

Cantano Electric Tractor Co., New York, Space 38, E. H.—Electric fore carriage.

Champion Co., Albert, Boston, Mass., Space 152, Bl. and S. T.,—Ignition outfits.

Chandler Co., The, Springfield, Mass., Space 111, E. P. and F. T.—Nameplates.

Chicago Battery Co., Chicago, Ill., Space 190, C. H.—Dry batteries.

Carpenter Steel Co., Reading, Pa., Space 210, Bs.— Nickel chrome steel frames.

Columbia Lubricants Co., New York, Space 141, Bl. and S. T.—Monogram lubricating oils.

Columbus Buggy Co., Columbus, Ohio, Space 37, E. H.—Columbus electric carriages.

Consolidated Mfg. Co., Toledo, O., Space 170, C. H.—Yale California motor bicycles.

Continental Caouchouc Co., The, New York, Space 147 Bl. and S. T.—Continental tires.

Continental Rubber Works, Erie, Pa., Space 110, E. P. and F. T.—Continental tires.

Cooper-Hewitt Electric Co., New York, Space 209, Bs.—Hewitt Mercury Arc rectifers.

Cramp & Sons Ship and Engine Building Co., the Wm., Philadelphia, Pa., Space 129.—Manganese bronze castings.

D

Dac Automobile Supply House, New York, Space 142, Bl. and S. T.—Supplies.

Dayton Electrical Manufacturing Co., Dayton, O., Space 104, E. P. and F. T.—Apple igniters and storage battery chargers.

Decauville Automobile Co., New York, Space 17, M. F.—Decauville cars.

DeDietrich Importing Co., New York, Space 39, E. H.—DeDietrich cars.

Diamond Chain Mfg. Co., Indianapolis, Ind., Space 196, C. H., Diamond chains.

Diamond Rubber Co., The, Akron, O., Space 51, E. P. and F. T.—Diamond tires.

Dietz Co., R. E., New York, Space 93, E. P. and F. T.—Dietz lamps.

Duff Manufacturing Co., The, Allegheny, Pa., Space 137, Bl. and S. T.—Barret automobile jacks.

E

Eastern Carbon Works, Jersey City, N. J., Space 195, C. H.—Eastern ignition cells.

Edmunds & Jones Mfg. Co., Detroit, Mich., Space 179, C. H.—"E. & J." automobile lamps.

Electric Vehicle Co., Hartford, Conn., Space 41, E. H.—Columbia electric carriages.

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Space 47, Bs.—Columbia commercial vehicles.
Space 12, M. F.—Columbia gasolene touring cars.

Elmore Manufacturing Co., Clyde, O., Space 9, M. F.—Elmore two-cycle, two and four cylinder touring cars.

English & Mersick Co., New Haven, Conn., Space 143, Bl. and S. T.—Metallic automobile supplies.

F

Fine, Horace E., Trenton, N. J., Space 200, Bl.—Automobile monograms, license tags and ornaments.

Firestone Tire and Rubber Co., Akron, O., Space 64, E. P. and F. T.—Firestone side wire and detachable pneumatic tires.

Fisk Rubber Co., Chicopee Falls, Mass., Space 103, E. P. and F. T.—Fisk mechanically fastened tires for automobiles.

Franklin Manufacturing Co., H. H., Syracuse, N. Y., Space 11, M. F.—Franklin air cooled automobiles.

Funke, A. H., New York, Space 122, Bl. and S. T.—Lamps, horns, supplies, etc.

G

G & J Tire Co., Indianapolis, Ind., Space 55, E. P.—G & J detachable tires.

Gabriel Horn Manufacturing Co., New York, Space 186, C. H.—Gabriel horns and Foster shock absorber.

Gallia Electric Carriage Co., New York, Space 42, E. H.—Gallia electric vehicles.

Gas Engine Whistle Co., New York, Space 162, Bl. and S. B.—Watrous spent gas whistle.

Gilbert Mfg. Co., The, New Haven, Conn., Space 175, C. H.—Gilbert tire covers.

Goodrich Co., The B. F., Akron, O., Space 109, E. P. and F. T.—Goodrich tires.

Goodyear Tire and Rubber Co., The, Akron, O., Space 53, E. P. and F. T.—Goodyear tires.

Gray & Davis, Amesbury, Mass., Space 56, E. P. and F. T.—Lamps.

H

Ham Mfg. Co., C. T., Rochester, N. Y.—Space 194, C. H.—Lamps.

Hardy Co., The R. E., New York, Space 78, E. P. and F. T.—Sta-rite spark plugs.

Hartford Rubber Works Co., Hartford, Conn., Space 108, E. P. and F. T.—Perfected Dunlop, Hartford and Turner tires.

Hartford Suspension Co., New York, Space 193, C. H.—Traffault Hartford Suspension.

Harris Oil Co., A. W., Providence, R. I., Space 180, C. H.—Motor car lubricants.

Hatch & Brittain, Inc., Cleveland, Ohio, Space 198, Bl.—Parts.

Haynes Automobile Co., Kokomo, Ind., Space 27, M. F.—Haynes touring cars.

Heinze Electric Co., Lowell, Mass., Space 201, Bl.—Heinze motor car coils.

Herz & Co., New York, Space 92 E. P. and F. T.—Spark plugs and ignition supplies in general.

Hess-Bright Manufacturing Co., The, Philadelphia, Space 52, E. P. and F. T.—Ball bearings.

Hewitt Motor Co., New York, Space 48, E. H.—Hewitt gasolene cars.
Space 48, Bs.—Hewitt commercial vehicles.

Hooker & Co., Henry, New York, Space 212, Bs.—Bodies.

Hollander & Tangeman, New York, Space 18 M. F.—F. I. A. T. cars.

Holly Bros., Detroit, Mich., Space 191 C. H.—Holly magnetos and carburetters.

Hyatt Roller Bearing Co., Harrison, N. J., Space 58, E. P. and F. T.—Roller bearings.

Hydraulic Oil Storage Distributing Co., Detroit, Mich., Space 204, Bl.—Snell system of hydraulic storage.

I

Imperial Brass Mfg. Co., The, Chicago, Ill., Space 160, Bl. and S. T.—Wixon compound air pump and Imperial Lyon headlight adjuster.

International A. & V. Tire Co., New York, Space 73, E. P. and F. T.—Tires.

Iron Clad Mfg. Co., Brooklyn, N. Y., Space 170, C. H.—Gasolene storage tanks.

J

Jones & Co., Phineas, Newark, N. J., Space 85, E. P. and F. T.—Wood wheels.

Jones Speedometer Co., New York, Space 85, E. P. and F. T.—Speedometers and Odometers.

Judson & Downing Co., New York, Space 135, Bl. and S. T.—Automobile parts of every description.

K

Knox Automobile Co., Springfield, Mass., Space 29, M. F.—Knox automobiles, including new four cylinder air-cooled type.
Space 50, Bs.—Knox commercial vehicles.

L

Lackawanna Leather Co., Space 158, Bl. and S. T.

Light Manufacturing and Foundry Co., Pottstown, Pa., Space 88, E. P. and F. T.—Aluminum.

Locomobile Company of America, Bridgeport, Conn., Space 31, M. F.—Locomobile touring cars.

Lunkenheimer Co., The, New York, Space 188 C. H.—Lubricating devices.

M

Manhattan Storage Co., New York, Space 203 Bl.

Manufacturers' Foundry Co., The, Waterbury, Conn., Space 71, E. P. and F. T.—Motor castings.

Matheson Motor Car Co., Wilkesbarre, Pa., Space 39, E. H.—Matheson touring cars.

McCord & Co., Chicago, Ill., Space 178, C. H.—Lubricator.

McGiehan Manufacturing Co., New York, Space 75, E. P. and F. T.—Odometers.

Meyrowitz Mfg. Co., New York, Space 15, Bl. and S. T.—Goggles.

Mesinger Mfg. Co., New York, Space 205, Bl.—Mesinger tire band.

Michelin Tire, American Agency, Inc., New York, Space 145, Bl. and S. T.—Michelin Tires.

Michigan Steel Boat Co., Space 216, Bs.

Midgley Manufacturing Co., Columbus, O., Space 107, E. P. and F. T.—Pressed steel wheels.

Midvale Steel Co., Midvale, Pa., Space 128, B. L. and S. T.—Steels.

Miller, Charles E., New York, Space 139, Bl. and S. T.—Sundries and supplies of every description.

Motor, New York, Space 124, Bl. and S. T.

Motor Age, Chicago, Space 127, Bl. and S. T.

Motor Car Equipment Co., The, New York, Space 148, Bl. and S. T.—Supplies for automobiles.

Motor Car Specialty Co., Trenton, N. J., Space 82, E. P. and F. T.—Lea tire pump.

Motor World, New York, Space 144, Bl. and S. T.

Motor Way, The, Chicago, Ill., Space 136, Bl. and S. T.

Motsinger Device Manufacturing Co., Pendleton, Ind., Space 62, E. P. and F. T.—Motsinger auto sparker.

Morgan and Wright, Inc., Chicago, Ill., Space 83, E. P. and F. T.—Morgan and Wright clincher and detachable tires.

Mosler & Co., A. R., New York, Space 202, Bl.—Mosler timers, Spit-fire spark-plugs.

Mutty Co., L. J., Boston, Mass., Space 125, Bl. and S. T.—Automobile top materials.

N

National Battery Co., Buffalo, N. Y., Space 115, Bl. and S. T.—"Reliance" batteries for electric vehicles.

National Carbon Co., Cleveland, O., Space 66, E. P. and F. T.—Columbia dry batteries.

National Sales Corporation, New York, Space 199, Bl.—Sundries.

New York Carriage Top Co., New York, Space 214, Bs.—Tops.

New York and New Jersey Lubricant Co., New York, Space 96, E. P. and F. T.—Lubricants.

New York Sporting Goods Co., New York, Space 153, Bl. and S. T.—Supplies.

Noera Mfg. Co., The, Waterbury, Conn., Space 157, Bl. and S. T.—Lamps, pumps, etc.

Northern Manufacturing Co., Detroit, Mich., Space 7, M. F.—Northern touring cars and runabouts, compressed air control.

O

Ofeldt & Sons, F. W., Brooklyn, N. Y., Space 159, Bl. and S. T.—Ofeldt's steam specialties.

Olds Motor Works, Detroit, Mich., Space 10, M. F.—Olds touring cars and runabouts.
Space 49, Bs.—Olds commercial vehicles.

Oliver Manufacturing Co., Chicago, Ill., Space 76, E. P. and F. T.—Automobile jacks.

P

Packard Motor Car Co., Detroit, Mich., Space 21, M. S.—Packard cars.

Pantosote Co., New York, Space 167, C. H.—Pantosote for coverings.

Patterson, Gottfried & Hunter, Ltd., New York, Space 123, Bl. and S. T.—Tools.

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Parish & Bingham Co., Cleveland, O., Space 74, E. P. and F. T.—Steel frames, parts and fittings.

Peerless Motor Car Co., Cleveland, O., Space 23, M. F.—Peerless touring cars.

Pennsylvania Rubber Co., Jeannette, Pa., Space 61, E. P. and F. T.—Tires.

Pierce Co., George N., Buffalo, N. Y., Space 29, M. F.—Pierce Arrow touring cars.

Pittsfield Spark Coil Co., Pittsfield, Mass., Space 96, E. P. and F. T.—Ignition outfits.

Pope Manufacturing Co., Hartford, Conn., Space 8, M. F.—Pope Hartford touring cars.

Space 46, Bs.—Pope Hartford trucks.

Pope Motor Car Co., Toledo, O., Space 24, M. F.—Pope Toledo touring cars.

Space 40, E. H.—Pope Waverly electrics.

Space 45, Bs.—Pope commercial vehicles.

Post & Lester Co., The, Hartford, Conn., Space 154, Bl. and S. T.—Lamps, horns and supplies.

Prest-O-Lite Co., Indianapolis, Ind., Space 185, C. H.—Prest-O-Lite gas tanks.

Prosser & Son, Thomas, Space 130, Bl. and S. T.

R

Railway Appliance Co., Chicago, Ill., Space 207, Bl.—Auto-Cle wrenches.

Remy Electric Co., Anderson, Ind., Space 187, C. H.—Remy magnetos.

Republic Rubber Co., Space 172, C. H.—Tires.

Republic Rubber Tire and Shoe Co., New York, Space 155, Bl. and S. T.—Tire shoes.

Rose Manufacturing Co., Philadelphia, Pa., Space 106, E. P. and F. T.—Neverout lamps.

Roth Jack and Tool Co., Space 120, Bl. and S. T.

Royal Motor Car Co., Cleveland, O., Space 5, M. F.—Royal touring cars.

Rubay, Leon, New York, Space 150, Bl. and S. T.—French specialties.

Rushmore Dynamo Works, Plainfield, N. J., Space 143, B. L. and S. T.—Lamps.

S

Sampson Leather Tire Co., New York, Space 146, Bl. and S. T.—Sampson leather tires.

Schwartz Wheel Co., The, Philadelphia, Pa., Space 174, C. H.—Wheels.

Semi-Dry Battery Co., New York, Space 164, Bl. and S. T.

Sibley & Pitman, New York, Space 161, Bl. and S. T.—Supplies.

Shelby Steel Tube Co., Pittsburg, Pa., Space 87, E. P. and F. T.—Steel tubing.

Soffan, M., New York, Space 117, Bl. and S. T.—Hercules tires.

Smith & Mabley, Inc., New York, Space 15, M. F.—Imported cars.

Smith & Mabley Manufacturing Co., New York, Space 28, M. F.—S & M Simplex cars.

Smith & Co., Edward, New York, Space 114, Bl. and S. T.—Specialties.

Spicer Universal Joint Manufacturing Co., Plainfield, N. J., Space 79, E. D. and F. T.—Spicer universal joints.

Splitdorf, C. F., New York, Space 54, E. P. and F. T.—Ignition apparatus.

Springfield Auto Top and Upholstering Co., Springfield, Mass., Space 213, Bs.—Tops.

Sprague Umbrella Co., The, Norwalk, O., Space 168, C. H.—Tops.

Springfield Metal Body Co., Springfield, Mass., Space 70, E. P. and F. T.—Bodies.

Standard Roller Bearing Co., Philadelphia, Pa., Space 169, C. H.—Ball bearings, axles, etc.

Standard Welding Co., The, Cleveland, O., Space 98, E. P. and F. T.—Rims, tubing, etc.

Stearns Co., The F. B., Cleveland, O., Space 32, M. F.—Stearns touring cars.

Steel Ball Co., The, Chicago, Ill., Space 65, E. P. and F. T.—Hill Precision oilers.

Stevens Arms and Tool Co., Chicopee Falls, Mass., Space 1, M. F.—Stevens-Duryea touring cars.

Studebaker Automobile Co., South Bend, Ind., Space 30, M. F.—Studebaker touring cars.

Space 35, E. H.—Studebaker electric vehicles.

Space 44, Bs.—Studebaker commercial vehicles.

Swinehart Clincher Tire and Rubber Co., Akron, O., Space 68, E. P. and F. T.—Swinehart tires.

T

Timken Roller Bearing Co., Canton, O., Space 94, E. P. and F. T.—Roller bearings.

Thomas Motor Co., E. R., Buffalo, N. Y., Space 26, M. F.—Thomas touring cars.

Trade Advertising and Publishing Co., Philadelphia, Pa., Space 140, Bl. and S. T.

Twentieth Century Manufacturing Co., New York, Space 95, E. P. and F. T.—Lamps.

U

Utility Co., The, New York, Space 77, E. P. and F. T.—Electrical Specialties.

V

Valentine & Co., New York, Space 181, C. H.—Varnishes.

Vacuum Oil Co., New York, Space 165, Bl. and S. T.—Lubricants.

Veeder Manufacturing Co., The, Hartford, Conn., Space 57, E. P. and F. T.—Odometers, Tachometers, etc.

Vehicle Equipment Co., Long Island City, N. Y., Space 36, E. H.—Electric vehicles. Space 44, Bs.—Electric commercial vehicles.

Ventilated Cushion Co., The, Space 208, Bl.

W

Waltham Manufacturing Co., Waltham, Mass., Space 8, M. F.—Waltham-Orient cars.

Walter Automobile Co., New York, Space 2, M. F.—Walter cars.

Warner Instrument Co., Beloit, Wis., Space 68, E. P. and F. T.—Speedometers.

Warner Gear Co., Muncie, Ind., Space 90, E. P. and F. T.—Gears.

Way Muffler Co., Philadelphia, Pa., Space 134, Bl. and S. T.—Way Mufflers.

Webb Co., The, New York, Space 192, C. H.—Speed indicators.

Weed Chain Tire Grip Co., New York, Space 189, C. H.—Weed chain tire grips.

Wheeler, F. H., Indianapolis, Ind., Space 80, E. P. and F. T.—The Schebler carburetter.

Wheeler Manufacturing Co., Detroit, Mich., Space 175, C. H.—Tops.

Whitlock Coil Pipe Co., Hartford, Conn., Space 105, E. P. and F. T.—Whitlock coolers.

Whitney Manufacturing Co., Hartford Conn., Space 59, E. P. and F. T.—Whitney chains.

Witherbee Igniter Co., New York, Space 162, B. L. and S. T.—Witherbee igniters.

Willis Co., E. J., New York, Space 138, B. L. and S. T.—Specialties and sundries.

Winton Motor Carriage Co., Cleveland, O., Space 25, M. F.—Winton touring cars.

Wray Pump and Register Co., Rochester, N. Y., Space 100, E. P. and F. T.—Pumps and pressure registers.

Wray Pump and Register Co., Rochester, N. Y., Space 100 E. P. and F. T.—Pumps and pressure igniters.

Motor Wagon vs. Horse Costs.

Here is the itemized account, kept by a Chicago merchant in a long and thorough trial of various motor cars compared to two double-team horse wagons whose work was done by one twenty horse-power automobile averaging fifty miles a day:

	Per month.
Labor, driver	$75.00
Gasoline to run fifty miles per day	26.00
Oil, lubricating	4.00
Batteries	3.00
Painting, $30 per annum	2.50
Repairs, besides tires	20.00
Tire maintenance, solid tires cost per set, $150	25.00
	$155.50
Cost per year	$1,866.00

	Per month.
Cost to keep five horses, $20	$100.00
Shoeing five horses, $2.50	12.50
Wagon repairs and painting, $5	10.00
Harness repairs, $1.50	4.00
Labor, two drivers, $60	120.00
	$246.50
Cost per year	$2,958.00

Cost of operating and maintaining twelve horse-power, 1,500-pound delivery car, fifty miles per day:

	Per month.
Labor, driver	$65.00
Gasolene to run fifty miles per day	16.00
Lubricating oil	3.00
Batteries	2.00
Painting, $30 per annum	2.50
Repairs besides tires	20.00
Tire maintenance, solid tires	12.50
	$121.00
Cost per year	$1,452.00

Cost of maintaining two single horse wagons to do the work of one motor truck:

	Per month.
Cost to keep two and one-half horses	$50.00
Shoeing two and one-half horses, $2.50	6.25
Repairing and painting two wagons, $5	10.00
Repairs, two harnesses	2.00
Labor, two drivers, $60	120.00
	$188.25
Cost per year	$2,259.00

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The Show in the Armory

TOTAL NUMBER EXHIBITORS, 236

TOTAL CARS, 81; OTHER THAN CARS, 155

"Removed.—The Sixth annual automobile show, held for five years in the old Garden, to the magnificent new armory, Sixty-ninth Regiment."

This is the way the Automobile Club of America states the situation. There's defiance in every line of it, and defiance fits well with armories, and also in those who will display motor cars in the Sixty-ninth's armory, from Saturday night to the Saturday following. They are making those cars and displaying them in defiance of the Selden patent, which is responsible for the show of "the firm across the street."

Just as that patent brought together those who comprise the Licensed Association, so it was responsible for the Armory show, which, though appearing a club affair, yet has as a "silent partner" the American Motor Car Manufacturers' Association, the roll of which holds the names of nearly all of those who rank high as "independent" manufacturers and who snap their fingers at Selden patents and the like; indeed, in the exhibit of one of them, the Ford Motor Co., will be found the original Ford car, now appearing archaic and toylike, but which is expected to bear strongly on the matter of patent independence.

In every respect will the armory show prove more democratic than the "other one." It will have a greater number and diversity of exhibitors and will be much richer in those cars that are more nearly within the means of the masses. There will be fewer heavy cars and more light touring cars and runabouts, and in whatever class the dominant question of price will be found answered more nearly as the popular demand would have it answered.

Also there will be those features that entertain as well as interest and that will serve to make the armory show the popular show. In the temporary theatre on the fourth floor each afternoon and evening the Vanderbilt Cup Race can be enjoyed, as well as other vitagraph presentations of the Bennett Cup Race, Mount Washington "Climb to the Clouds," the Ormond-Daytona Beach races and recent airship doings on the other side.

While the automobile in all its up-to-date advancement and all that is allied with it will be contained somewhere in the mammoth structure, space has been found in the gymnasium for the Aero Club of America exhibit. It is probable that the "Aero Club No. 1," the dirigible balloon which Leo Stevens, the famous aeronaut, designed, will be suspended from the top of the curved roof in the big drill hall. What should prove another attractive object in the airship department will be Prof. Alexander Graham Bell's kite, which, though of enormous size, is by its peculiar tetrahedral principle of construction, literally as light as a feather and is still so strong and substantial that it has recently supported in flight for a long time a man weighing 165 pounds and tackle weighing 62 pounds.

Then there will be Santos Dumont's "No. 99," the small airboat he used to call his runabout, and which, in many ways, has served him better than his larger machines. He found it to be the most reliable and handy of all, and tempted its master to use it in place of a cab when going about town in Paris. Next will come Captain Baldwin's clever imitation, the "California Arrow," that helped its designer to save the reputation of aerial flights at the St. Louis Exposition, and, guided by the intrepid Roy Knabeshue, was the first motor-driven craft to sail above the streets of New York.

In this section will be exhibited every important development in aerostation brought forth in this country, in addition to much from a foreign source. Besides the balloons and dirigible airships of all forms there will be parachutes, aeroplanes, tetrahedral, box and other kites; lifting machines, both with propellors and wings; lightweight motors, metrological instruments; a complete collection of the literature of mechanical flight; pictures of various famous flying machines, both in flight and at rest, and an exhibit of materials and accessories. In short, this exhibit will constitute a complete exposition of all that has been achieved in the solution of the greatest unsolved mechanical problem that today confronts mankind.

Something out of the ordinary in the show and indicating another direction of motor departure, will be a motor battery

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SIXTY-NINTH REGIMENT ARMORY.

wagon, loaned by the Ordnance Department of the United States Army. This wagon is provided with a lathe, forge and necessary equipment for almost any kind of emergency on the battlefield.

As the building has just been completed, there will be no attempt made at elaborate decoration, the show committee believing that the public will be much better pleased to realize the architectural beauties of the fine big drill hall than to have it hidden by colored bunting. The committee, however, has planned an effective and artistic scheme of stand decoration that is expected to blend into the industrial picture harmoniously and invitingly without detracting from the character of the exhibition, all decorations, signs and lights having been provided by an official decorator. The members of the show committee decided against elaborate decoration, as it was their opinion that such a plan would have a tendency to absorb some of the attention which otherwise would be fully centred on the exhibits.

Despite the prominence of the Selden interests the ranks of the independents have expanded amazingly during the last twelvemonth, and it is significant that many of the newcomers, far from being mere "fly-by-nights," have come with good financial backing, are promoting thoroughly legitimate goods and promise to prove important additions to the industry.

As the season of 1906 opened so very early and many of the makers have had their new cars on the road for a number of weeks or even months, many of the exhibits, while new in one sense, will be unveiled for the first time on Saturday night. Therefore the show will be one of comparison quite as much as a mere exhibition of the new and curious, and all the more valuable to the observer because the announcements already made public will have prepared him for what is to be found there, and, by the same token, will have sharpened his appetite for what is to come. The West is unusually well represented any may be said to have come East in force. The number of Western cars is, indeed, surprising and well shows the expansion of the industry and typical of that portion of the country there is a deal of independence of inventive thought displayed.

Among the distinct innovations probably none has been given more in the way of publicity, and none will attract more attention that the Ford four-cylinder runabout. The idea of a light four-cylinder car at less than $500 has been a sort of poor man's dream for years. Many have said that it never could be realized, others that it would come in time. But none except Henry Ford has had the temerity to attempt so radical a departure from current practice, no matter what his opinion may have been as to the possibility of the idea. Consequently, this first little quadruple engined machine will be regarded with curiosity by all and with an equal degree of interest. In addition, the Ford line will include a sensational six-cylinder car which, like its little brother, will be the lowest priced thing of its class ever offered to the public.

Among the makers who are making their debut this year, and consequently will attract a good measure of attention, is the Aerocar Company, which presents an air-cooled machine, thoroughly up-to-date, judging from its general specifications, and backed by interests that lack nothing. Then there is the American Berliet and the American Mors and the American replicas of standard foreign products manufactured, the one by the American Locomotive Co. and the other by the St. Louis Car Co., names in themselves sufficient guarantees. Also there is the American Napier of similar derivation. In addition there will be the Viqueot, the Crawford, the York, the Iroquois, the Moon, the Dorris and the Windsor, all entirely new so far as New York shows are concerned.

Of the notable new models of makes which already are well placed in the market will be the new four-cylinder Ramblers, the Ranier, the Cleveland, the Mitchell, the Lozier, the Maxwell, the National, which has made such an impressive mark during the year, the well-heralded Reo, the air-cooled Corbin, the Wayne, the Welch, the St. Louis, the Queen, the Austin, the

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Glide, the Premier, the Berkshire, the Marmon, the Marion, the Pungs-Finch—all cars with reputations. The Austin, embodying among other new and exclusive features an improved system of double ignition, and a patent spring controller which absorbs the recoil is a new Western production of some interest, while another car which will prove considerable of an attraction will be the six-cylinder Frayer-Miller, rated at 40 horsepower, and equipped with the unique system of air cooling which caused so much comment at the shows a year ago, and which has accredited itself so well during the past season. Among the cars of long established makers which will be seen for the first time at any show will be the new Grout gasolene, whose maker plumped for the internal combustion motor early in the season, with apparently very successful results.



J. B. BARTHOLOMEW,
Treasurer A. M. C. M. A.

Nor will the commercial type of vehicle be neglected several newcomers being noticeable among others. Of these the Autocar Equipment Company will present one of the most attractive from the standpoint of general utility and stability. It will be gasolene driven, and embodies several features worth nothing. Among the electric vehicles will be seen the Lansden, with its unique arrangement for drawing power from a trolley wire, shown for the first time, and, also, there will be the Rauch & Lang, the Atlas, the Rapid, the Champion, the Iroquois, the Commercial and the Logan.

The steam-driven contingent, which makes a brave showing, despite its paucity in numbers, will be entirely confined to the Armory Show. It will consist of the White —an exhibit which always proves a strong attraction— the Lane and the Johnson Auto-Carriage, which last, though by no means new, in the sense of being untried, yet embodies many distinctive features, and is placed on exhibition in New York for the first time.

There will be no less than five different exhibits of motor cycles, including the Indian, the Curtiss, the Wagner, the Reading Standard and the Marsh. Each will have its quota of new features.

The diversity of accessories also is greatest in the armory show. The Foster and House shock absorbers will be there, likewise



JAMES COUZENS,
Chairman American Motor Car Manufacturers Association.

the Diezeman and Sheddan, each of them a recent development; the Gabriel horn, the Hutchinson electrical horn and other horns will be shown, Charles E. Miller having several novel ones that never have been ex-



ROGER B. McMULLEN,
Manager A. M. C. M. A.

hibited before; indeed, and as usual, Miller's display will be practically an accessory show in itself. There is little of importance that it will not contain, and the delver after novelties and good things will find "rich picking" at Miller's big space. The Apple storage battery charger and the Edison battery, too, will be found in the armory, not to mention Splitdorf's ignition outfits and the other electrical apparatus which will be found in unusual abundance. The thousand and one knicknacks, most of them of real use and some of them curious to behold, will abide for the week in the armory.

In tires, too, the armory show will be more prolific, thanks to the annual outcropping of non-puncturable "wonders," most of them previously unheard of and which once the show is over go their way unobserved and unsung. No show is complete without them. But the standard tires, those of proud repute, are not lacking. The Firestone mechanically fastened air tire will be shown for the first time, likewise the new Diamond diaphragm inner tube and flat thread tire; the Pennsylvania flat thread tire also will be displayed for the first time.



BENJAMIN BRISCOE,
Auditor A. M. C. M. A.

The G. & J., the Morgan & Wright, the Goodrich, the Hartford Dunlop, the Goodyear, the last named three not only in clincher form but also with their new mechanical fastenings comprising removable rings or flanges, and the Fisk, first in the field seriously with a mechanical means of securement—each and all of them will be in evidence, as a matter of course, it may well be added.

Exhibitors and Spaces.

The exhibitors at the armory show—alphabetically arranged, and the wares they will display, are as follows:

MF.—Main Floor.
B.—Basement.
G.—Gallery.
GA.—Gallery Annex.
Gym.—Gymnasium.

A

Acme Motor Car Co., Reading, Pa., MF, Sec. B2.—Acme 4-cylinder touring cars.

Aerocar Co., Detroit, Mich., MF, Sec. B2.—New 4-cylinder 24 h. p. air-cooled Aerocar.

American Ball Bearing Co., Cleveland, O., G, Space 27.—Ball bearing axles, wheels, etc.

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American Generator Co., New York City, Gym., Sec. 5.—Gas generators.
American Locomotive Auto Co., New York City, MF, Sec. D3.—American Berliet touring cars.
Anderson Spark Plug Co., Boston, Mass.—Spark-plugs.
American Peugeot Automobile Co., Passaic, N. J.—Peugeot cars.
American Motor Co., Brockton, Mass., B, Sec. A2.—Metz and Marsh motor bicycles.
Archer & Co., New York City, MF, Sec. C and B1.—De Leon and Hotchkiss cars.
Aster Co., New York City, MF, Sec. D and G, Sec. F.—Aster motors and accessories.
Ardsley Motor Car Co., Yonkers, N. Y., MF, Sec. A4.—Ardsley 4-cylinder touring car.
Aurora Automatic Machinery Co., Aurora, Ill., G, Space 32.—Thor motorcycles and fittings.
Austin Automobile Co., Grand Rapids, Mich., MF, Sec. B2.—Austin cars.
Auto-Car Equipment Co., Buffalo, N. Y., B, Sec. C1.—Gasolene and electric trucks, delivery wagons and passenger 'busses.
Auto-Lock Plug Co., Inc., New York City, Gym., Sec. 7.—Lock switch.
Automobile Topics, New York City, MF, Sec. K1.
Auto Supply Co., New York City.—Supplies.

B

Badger Brass Mfg. Co., Kenosha, Wis., G, Space 8.—Solar acetylene gas lamps.
Baker Motor Vehicle Co., New York City, MF, Sec. B.—Baker electric cars.
Baldwin Chain and Mfg. Co., Worcester, Mass., G, Space 25.—Baldwin detachable and riveted chains.
Bartholemew Co., Peoria, Ill., MF, Sec. A4.—Glide cars.
Belden Auto Transmission Co., Pittsburg, Pa., G, Space 69.—Transmission gears.
Bertelli & Co., New York City, MF, Sec. K1.—Zust cars.
Berkshire Automobile Co., Pittsfield, Mass., MF, Sec. J.—Berkshire cars.
Blomstrom Motor Co., C. H., Detroit, Mich., MF, Sec. F.—Queen cars.
Bowser & Co., Inc., S. F., Fort Wayne, Ind., G, Space 55.—Gasolene storage outfits.
Boyle & Co., John, New York City, G, Space 65.—Robes.
Briscoe Mfg. Co., Detroit, Mich., G, Space 15.—Radiators, fenders, tanks and metal specialties.
Boehm & Levine, New York City, Gym, Sec. 4.—Supplies.
Brown, F. M., New York City, A, Space 66.—Specialties.
Brown, W. H., Cleveland, Ohio, G, Space 30.—Dust shields.
Brown-Lipe Gear Co., Syracuse, N. Y., G, Space 42.—Gears.
Buckeye Mfg. Co., Anderson, Ind., MF, Sec. B2.—Lambert friction driven runabouts, touring cars and trucks.
Byrne, Kingston & Co., Kokomo, Ind., G, Space 48 and 48a.—Kingston carburetters and mufflers.

C

Carey Motor Co., B, Sec. A2.—Automobiles.
Central Park Auto Storage Co., New York City, MF, Sec. D.—Automobiles.
Chadwick Motor Car Co., New York City, B, Sec. E.—Chadwick cars.
Charron, Giradot & Voigt, New York City —C. G. V. cars.
Cleveland Motor Car Co., Cleveland, Ohio, MF, Sec. E2.—1906 30-35 h. p. Cleveland car.
Columbia Lubricants Co. of New York, New York City, Gym., Sec. 7.—Oils and greases.
Connecticut Telephone and Electric Co., Meriden, Conn., G, Space 47.—Connecticut spark coils and ammeters.
Cook's Railway Appliance Co., Kalamazoo, Mich., G, Sec. J.—Automobile jacks.
Commercial Motor Car Co., New York City, B, Sec. C2.—Gasolene commercial cars.
Consolidated Rubber Tire Co., New York City, G, Sec. A.—Tires.
Continental Rubber Works Co., Erie, Pa., G, Space 67.—Tires.
Continental Caoutchouc Co., New York City, G, Sec. 1.—Tires.
Corbin Motor Vehicle Corporation, New Britain, Conn., MF, Sec.C.—Corbin air-cooled cars.
Cramp & Sons, Wm., Philadelphia, Pa., G, Space 57.—Castings, manganese bronze.
Crawford Automobile Co., Hagerstown, Md., B, Sec. A1.—4-cylinder vertical 24-28 h. p. Crawford touring car.
Cryder & Co., New York City, MF, Sec. E1. —Leon Bollee cars.
Curtiss Mfg. Co., G. H., Hammondsport, N. Y., Gym., Sec. 4.—Motorcycles.

D

Dac Automobile Supply House, New York City, Gym., Sec. 6.—Supplies.
Daimler Mfg. Co., Long Island City, N. Y., MF, Sec. A1.—American Mercedes cars.
Dayton Motor Car Co., Dayton, Ohio, MF, Sec. A2.—1906 Model D Stoddard-Dayton touring car.
Dayton Electrical Mfg. Co., Dayton, Ohio, G, Space 13.—Apple igniters.
Detroit Auto Vehicle Co., Detroit, Mich., B, Sec. K.—2-cylinder 2-cycle Crown delivery wagon.
Detroit Motor Car Supply Co., Detroit, Mich., G, Sec. 58.—Supplies.
Detroit Tool Co., Detroit, Mich., Gym., Sec. 4.—Tools.
Diamond Chain & Mfg. Co., Indianapolis, Ind., G, Space 10.—Diamond chains.
Diamond Rubber Co., Akron, Ohio, G, Space 7.—Diamond detachable clincher tires.
Dietz Co., R. E., New York City, G, Space 23.—Lamps.
Dolson Automobile Co., Charlotte, Mich., Dolson 2 and 4-cylinder cars.
Dorris Motor Car Co., St. Louis, Mo., B, Sec. A2.—Dorris cars.
Duryea Power Co., Reading, Pa., MF, Sec. B2.—Duryea cars.
Duff Mfg. Co., Pittsburg, Pa.—Barrett automobile jacks.

E

Eastern Carbon Works, Jersey City, N. J., G, Space 35.—Ignition cells and battery conectors.
Edison Storage Battery Co., Glen Ridge, N. J., G, Sec. H.—Storage batteries.
Edmunds & Jones Mfg. Co., Detroit, Mich., G, Space 33.—E. & J. gas and oil side lamps.
E. H. V. Co., Middletown, Conn., MF, Sec. F.—Compound cars.
Electric Rubber Mfg. Co., G, Sec. E.—Tires.
English Daimler Co., New York City, MF, Sec. A1.—Daimler cars.
Everlastic Tire Works, Chester, Pa., Gym., Sec. 9.—Tire filler.

F

Firestone Tire and Rubber Co., Akron, Ohio, G, Space 46.—Firestone pneumatic and solid tires.
Fisk Rubber Co., Chicopee Falls, Mass., G, Space 14.—Fisk mechanically fastened tires.
Ford Motor Co., Detroit, Mich., MF, Sec. A2.—Ford cars, including new model 4-cylinder runabout and 6-cylinder touring car.

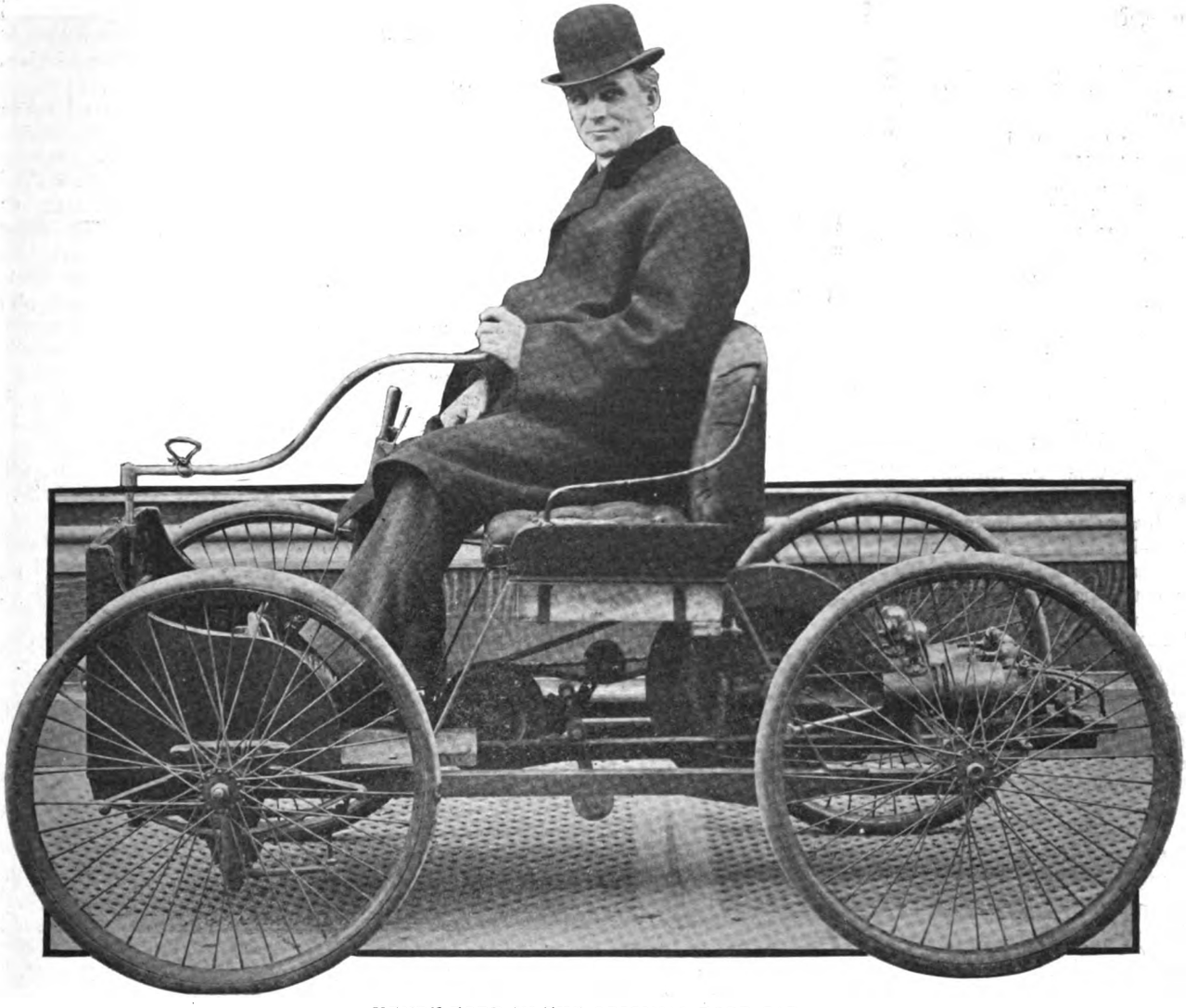
G

Gabriel Horn Mfg. Co., Cleveland, Ohio, G, Space 20.—Gabriel horns and Foster shock absorber.
Gallaher, E. B., New York City, MF, Sec. A3.—Brasier and Cleveland cars.
G & J Tire Co., Indianapolis, Ind., G, Space 26.—G & J detachable clincher tires.
Gearless Transmission Co., Glens Falls, N. Y., G, Sec. G.—Direct drive transmission.
Gleason, Peters Air Pump Co., New York City, G, Sec. A.—Pumps.
Goebel, F. A., Marietta, Ohio, Gym., Sec. 7. —Switches.
Goodrich Co., B. F., Akron, Ohio, G, Space 9.—Goodrich detachable and clincher tires.
Goodyear Tire and Rubber Co., Akron, Ohio, G, Space 3.—Goodyear detachable and clincher tires.
Gray & Davis, Amesbury, Mass., G, Space 2.—Headlight, side and tail, oil and acetylene gas lamps.
Gray-Hawley Mfg. Co., Detroit, Mich., G, Space 68.—"Autochime" horn.
Grout Bros. Automobile Co., Orange, Mass., MF, Sec. B1.—Grout gasolene cars.

H

Hamburg Tire Co., New York City, G, Sec. B.—Tires.
Hardy Co., R. E., New York City, G, Space 61.—"Sta-rite" spark-plugs.
Harris Oil Co., A. W., Providence, R. I., G, Space 34.—Lubricants.
Hartford Rubber Works Co., Hartford, Conn., G, Space 1.—Perfected Dunlop detachable and Hartford clincher and Turner tires.
Hartford Suspension Co., New York City, G, Space 38.—Truffault-Hartford suspension.

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HENRY FORD IN THE ORIGINAL FORD CAR.

Hatch & Brittain, Cleveland, Ohio.—Parts.
Hendee Mfg. Co., Springfield, Mass., MF, Sec. C.—Indian motorcycles and attachments.
Herz & Co., New York City.—Spark-plugs, switches, timers, etc.
Hess-Bright Mfg. Co., Philadelphia, Pa., G, Space 53.—Ball bearings.
Hicks Automobile Co., Brooklyn, N. Y., Gym., Sec. 9.
Hjorth & Co., Wm., Jamestown, N. Y.—Wrenches.
Hill Mfg. Co., Buffalo, N. Y., G, Sec. J.—Tops, wind shields, bodies and seats.
Horseless Age, New York City, G, Space 67.
Hollingshead Co., R. M., Camden, N. J., Gym., Sec. 5.—Castings.
Hutchinson Electric Horn Co., New York City, G, Sec. D.—Electric horns.
Hyatt Roller Bearing Co., Harrison, N. J., G, Space 37.—Roller bearings.

I

International A. & V. Tire Co., New York City, N. Y., G, Space 22.—Tires.
Iron Clad Mfg. Co., Brooklyn, N. Y., G, Space 45.—Tanks.
Iroquois Iron Works, Buffalo, N. Y., B, Sec. B.
Iroquois Motor Car Co., Seneca Falls, N. Y., B, Sec. A.—Iroquois trucks.

J

Jackson Automobile Co., Jackson, Mich., MF, Sec. A2.—Jackson cars.
Jeffery & Co., Thos. B., Kenosha, Wis., MF, Sec. B1.—Rambler cars.
Johnson Service Co., New York City, MF, Sec. J.—Johnson steam car.
Judson Co., J. G., New York City, Gym., Sec. 10.—Supplies.

K

Kinsey Mfg. Co., Dayton, Ohio, G, Sec. E.—Radiators, hoods, fenders, tanks, pressed steel frames and dashes.
Klean-A1 Mfg. Co., New York City, Gym., Sec. 2.—Soaps.
Knox Motor Truck Co., Springfield, Mass., MF, Sec. B2.—Atlas trucks.

L

Lane Motor Vehicle Co., Poughkeepsie, N. Y., MF, Sec. B1.—Lane steam cars.
Lansden Co., Newark, N. J., MF, Sec. C.—Electric delivery wagons.
Lear Automobile Co., Oscar, Columbus, Ohio, MF, Sec. H.—Frayer-Miller air-cooled cars.
Lewis & Matthews Co., Boston, Mass., B, Sec. A2.—Ariel cars.
Light Mfg. & Foundry Co., Pottstown, Pa., G, Space 19.—Aluminum castings.
Lock Switch Mfg. Co., New York City, Gym., Sec. 2.—Switches and tire pressure device.
Lipman, Carl E. L., Beloit, Wis.—Lipman rotary pumps.
Logan Construction Co., Chillicothe, Ohio, B, Sec. E.—Logan cars.
Lowenstein, F., New York City, Gym., Sec 2.—Spark-plugs and Duplex igniters.
Lozier Motor Co., New York City, MF, Sec. B1.—Lozier cars.

M

Madison Kipp Lubricator Co., Madison, Wis., G, Sec. D.—Valveless oil pumps and force feed lubricators.
Manhattan Auto School, New York City.—Manhattan automobile heater.

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Manufacturers Red Book Pub. Co., New York City, Gym., Sec. 2.
Mfgrs. Com. Co., New York City, Gym., Sec. 3.—Brokerage.
Mills Mfg. Co., New York City, G, Sec. C.—Specialties.
Marion Motor Car Co., Indianapolis, Ind., MF, Sec. A4.—Marion air-cooled cars.
Maxwell-Briscoe Motor Co., Tarrytown, N. Y., MF, Sec. A4.—Maxwell cars.
Mason, Norris N, New York City, MF, Sec. A3.—Leon Bollee cars.
Mayo Radiator Co., New Haven, Conn., Gym., Sec. 1.—Radiators.
Mendel Dale & Co., New York City, MF, Sec. K2 and B, Sec. D.—Berliet cars.
Metallic Rubber Tire Co., Jersey City, N. J., Gym., Sec. 2.—Tires.
Miller, Chas. E., New York City, MF, Sec. K4.—Accessories and supplies.
Miller's Sons, Wm. P., Brooklyn, N. Y., G, Sec. G.—Lubricants.
Mitchell Motor Car Co., Racine, Wis., MF, Sec. A4.—Mitchell 4-cylinder cars.
Mitchell Punctureless Pneumatic Tire Co., Swampscott, Mass., B, Sec. G.—Tires.
Moline Automobile Co., Moline, Ill., MF, Sec. 32.—Moline cars.
Moon Motor Car Co., St. Louis, Mo., MF, Sec. B2.—30-35 h. p. 4-cylinder Moon touring car.
Moore Automobile Co., New York City.—Moore 40 h. p. car.
Morgan, B., Newport, R. I., Gym., Sec. 9.—Single piece valves and hose couplings.
Morgan & Wright, Inc., Chicago, Ill., G, Space 41.—Morgan & Wright clincher detachable tires.
Mors Automobile Co., New York City, MF, Sec. A3.—Mors cars.
Mosler & Co., A. R., New York City—Spark-plugs, timers, etc.
Motor, New York City, G, Sec. G.
Motor Car, New York City, Gym., Sec. 8.
Motor Car Equipment Co., New York City, G, Space 63.—Sundries.
Motor Way, Chicago, Ill.
McCord & Co., Chicago, Ill., G, Space 56.—Force feed lubricators.
McCrea Motor Truck Co., Cleveland, Ohio, B, Sec. B2.—Commercial vehicles.
McGiehan Mfg. Co., New York City, G, Space 62.—Speedometers and odometers.

N

Napier Motor Co. of America, Boston, Mass., MF, Sec. A3.—Napier cars.
National Carbon Co., Cleveland, Ohio, G, Space 17.—Columbia dry cells.
New York Sporting Goods Co., New York City.—Supplies.
N. Y. and N. J. Lubricant Co., New York City, G, Space 49 and 49A.—Lubricants.
National Motor Vehicle Co., Indianapolis, Ind., MF, Sec. A2.—National cars.
Nordyke & Marmon Co., Indianapolis, Ind., MF, Sec. B2.—Marmon cars.

O

Ofeldt & Sons, Nyack, N. Y., G, Sec. B and B, Sec. A2.—Fuel regulators, water tube boilers, regulators, levelers, etc.
Oliver Mfg. Co., Chicago, Ill., G, Space 31.—Peerless automobile jacks.

P

Palace Automobile Machine Co., New York City.
Palais de L'Automobile, New York City, MF, Sec. A1.—Renault and Delauney-Belleville cars.
Palmer & Christie, New York, MF, Sec. D2 and MF, Sec. A3.—Christie and Martini cars.
Panhard & Levassor, New York City, MF, Sec. A1.—Panhard cars.
Parrish & Bingham Co., Cleveland, Ohio, G, Space 52.—Pressed steel frames.
Pennsylvania Rubber Co., Jeannette, Pa., G, Space 36.—Pennsylvania tires.
Pittsburg Motor Vehicle Co., Pittsburg, Pa., B, Sec. A2.—Commercial vehicles.
Post Mfg. Co., New York City, Gym., Sec. 10.—Tire protectors.
Prest-O-Lite Co., Indianapolis, Ind., G, Space 59.—Prest-O-Lite gas tanks.
Premier Motor Mfg. Co., Indianapolis, Ind., MF, Sec. A2.—Premier air-cooled cars.
Prosser & Son, Thos., New York City, G, Sec. C.
Pungs-Finch Automobile Co., Detroit, Mich., B, Sec. A2.—Pungs-Finch cars.

Q

Quinby & Co., J., New York City.—Bodies.

R

Railway Appliance Co., Chicago, Ill., G, Sec. E.—Wrenches.
Rainier Co., New York City, MF, Sec C.—Rainier cars.
Rapid Motor Vehicle Co., Pontiac, Mich., B, Sec. E.—Commercial delivery wagons.
Rauch & Lang Carriage Co., Cleveland, O., B, Sec. A1.—Electric cars.
Reading Standard Cycle Mfg. Co., Reading, Pa., B, Sec. B1.—Reading Standard bicycles and Thoroughbred motorcycles.
Remy Electric Co., Anderson, Ind., G, Space 29.—Remy magnetos.
Reo Motor Co., New York City, MF, Sec. B2.—Reo cars.
Republic Rubber Co., Youngstown, Ohio, G, Space 64.—Tires.
Republic Rubber Tire and Shoe Co., New York City, Gym., Sec. 8.—Tires and tire covers.
Richard, Francos, New York City, G, Sec. B.—Automobiles.
Rollins Mfg. Co., Boston, Mass., Gym., Sec. 2.
Rose Mfg. Co., Philadelphia, Pa., G, Space 6.—Neverout lamps.
Rubay, Leon, New York City.—Sundries and supplies.

S

St. John Rubber Tire Co., New York City, B, Sec. I.—Solid cushion tire.
St. Louis Motor Car Co., St. Louis, Mo.—St. Louis cars.
Saks & Co., New York City.—Clothing.
Safety Electric Elevator Co., New York City, Gym., Sec. 3.
Scandanavian Fur and Leather Co., New York City, G, Sec. L.—Clothing.
Sheddan Mfg. Co., Baltimore, Md., Gym., Sec. 10.—Perfection air cushion.
Shelby Steel Tube Co., Pittsburg, Pa., G, Space 21.—Seamless steel tubing.
Sherwin Williams Co., Cleveland, Ohio, Gym., Sec. 5.—Paints.
Sibley & Pitman, New York City.—Lamps.
Spicer Universal Joint Mfg. Co., Plainfield, N. J., G, Space 44.—Spicer universal joints.
Splitdorf Co., C. F., New York City, G, Space 24.—Splitdorf spark-plugs, coils, commutators, and ignition apparatus.
Sprague Umbrella Co., Norwalk, Conn.—Sprague Canopy tops.
Springfield Metal Body Co., Springfield, Mass., G, Space 50.—Tops and aluminum bodies.
Standard Roller Bearing Co., Philadelphia, Pa., G, Space 5.—Steel balls, bearings, axles, etc.
Standard Welding Co., Cleveland, Ohio, G, Space 28.—Rims, tubing and parts.
Steel Ball Co., Chicago, Ill., G, Space 12.—Hill precision oilers.
Survey Map Co., New York City, G, Sec. B.—Maps.

T

Teel & Co., E., Medford, Mass., Gym., Sec. 8.—Windshields, tools, etc.
Twyford Motor Car Co., Brookville, Pa., B, Sec. H.—Commercial cars.
Timken Roller Bearing Axle Co., Canton, Ohio, G, Space 18.—Roller bearings, axles, etc.
Thermo-Electric Co., New York City, Gym., Sec. 3.—Ignition apparatus.
Trade Adv. and Pub. Co., Philadelphia, G, Space 60.
20th Century Mfg. Co., New York City, G, Space 4.—Lamps and generators.

U

Uncas Specialty Co., Norwich, Conn., G, Sec. H.—Leavitt secondary distributers and timers.

V

Veeder Mfg. Co., Hartford, Conn., G, Space 4.—Odometers, tachometers, etc.
Veedeer Vibrator Co., New York City, Gym., Sec. 8.—Vibrators.
Viqueot Co., New York City, N. Y., MF, Sec. F.—Viqueot cars.

W

Wagner Motor Cycle Co., St. Paul, Minn.. Gym., Sec. 3.—Wagner motorcycles.
Warner Gear Co., Muncie, Ind., G, Space 16.—Warner gears.
Wray Pump and Register Co., Rochester N. Y.—Pumps and pressure registers.
Warner Instrument Co., Beloit, Wis., G, Space 11.—Speedometers.
Wayne Automobile Co., Detroit, Mich., MF, Sec. A4.—Wayne cars.
Webb Co., New York City, G, Space 40.—Speed indicators.
Wells Light and Specialty Co., New York City, Gym., Sec. 7.
Welch Motor Car Co., Pontiac, Mich., MF. Sec. B1.—Welch cars.

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Westinghouse Companies, The, New York City, B, Sec. F1.—Westinghouse Schaid touring car and electric converter and mercury vapor lamp.
Wheeler Mfg. Co., Detroit, Mich., G, Space 51.—Tops.
White Sewing Machine Co., Cleveland, O., MF, Sec. B1.—White steam runabout and touring car.
Whitlock Coil Pipe Co., Hartford, Conn., G, Space 39.—Whitlock coolers.
Whitney Mfg. Co., Hartford, Conn., G, Space 43.—Whitney chains.
Wichman, John C., New York City, B, Sec. K.—Automobile Gesell-schaft.
Willis Co., E. J., New York City, G, Sec. K.—Sundries and supplies.
Windsor Automobile Co., Windsor, Ind., B, Sec. I.—40 h. p. Windsor car.
Witherbee Igniter Co., New York City, G, Sec. J.—Storage battery igniters.
Wolverine Automobile and Commercial Vehicle Co., Dundee, Mich.—Wolverine 2-cylinder cars.
Worcester Pressed Steel Co., Worcester, Mass.—Ball bearings, sheet metal specialties and forgings.

Y

York Automobile Co., York, Pa., B, Sec. J.—York cars.

The Man with "No Time to Read."

Think of a man in these days of strenuous competition, when, in order to succeed, one needs to know every wrinkle connected with his business, declining to subscribe for a journal published in his interest on the curious pretext that he has "no time to read," sagely remarks a contemporary.

One might, with almost as much reason, swear off eating on the ground that he has "no time to eat." Starving the brain is just as bad policy as starving the body, and that is what a man does when he refuses to subscribe to a paper published in his interests. Of course, everybody recognizes the necessity for feeding the body, but very few comparatively feel the same necessity for feeding the brain, and yet these same people will complain that they are not getting along satisfactorily; that they should have a show to make a good living as perhaps somebody else does.

The reason the other fellow does better is because he knows more, and the only way he can know more is by feeding his mind with practical information such as can be obtained from the columns of the up-to-date paper published for his benefit.

"Motor Mania," Australian Style.

"Motor Mania" has taken a new form in New South Wales, according to a report from Geelong. A man, while walking in the road, was seized suddenly with the idea that he was a motor car. He began to run about wildly, and, under the impression that he was traveling at the rate of sixty miles an hour, dashed blindly into trees, fences, and walls. Before he could be restrained he was black and blue from head to foot.

LAMPS FOR ALL VEHICLES.

Big Fees and Revokable Licenses for Motor Cars, Only, Urges Governor.

In his annual message to the New Jersey Legislature this week Governor Stokes paid considerable attention to the question of automobile legislation. As the Governor has taken the initiative in broaching the subject dearest to the hearts of his colleagues in South Jersey, there will no doubt be an influx of automobile bills before the session of 1906 adjourns. Public safety, said Governor Stokes, is still menaced by the use of motor vehicles, and for this he ascribed two reasons—failure to execute the law and reckless driving. The message advocated a graduated license fee for cars and revocable license fee for drivers.

The full text of that part of the message bearing on the subject of automobiles is as follows:

"No little attention was given by the Legislature last year to the regulation of automobiles on the highways. The representatives of the various interests agreed upon a measure which the Legislature adopted. Public safety, however, is still menaced by these motor vehicles. For this two reasons may be assigned—failure to execute the law and reckless driving. In a discussion of this matter, it is well to know just what the law is. Under its provisions automobiles are not authorized to run at any set rate of speed. Their speed must at all times be regulated so as not to endanger the life or limb or injure the property of any person." Judge Swayze so charged in the case of Kutz vs. Patten. The law, therefore, would seem to be stringent so far as the speed limit is concerned. Attempts to enforce this provision of the act have not been successful and the violators have suffered severe penalties. No law will enforce itself, however, and inaction on the part of municipal authorities encourages wilful and continued violations.

"Every legislative provision, however, should be made to remedy any just ground of complaint in connection with the use of automobiles upon our highways. The damage done through the use of these machines to the surface of our macadam and gravel roads should be compensated for and means to prevent reckless driving provided. A graduated license fee for cars might be charged and devoted to the repair of our damaged roadways.

"Locomotive engineers, who run upon a defined track, are required to serve several years of apprenticeship before they are permitted to take charge of an engine. An automobile capable of running from fifty to seventy-five miles an hour is granted the right of way upon our streets and highways and is driven in some cases by amateurs who have had little or no experience in the handling and management of such powerful machines, whose eyesight may be defective or who for other reasons may be entirely incapable of appreciating the responsibility they have assumed. It would seem that drivers of automobiles or chauffeurs should be required to have a license, and this license should be revoked upon the violation of its provisions, under proper rules and regulations. The revocation of a license will go far toward halting reckless driving, as it would deprive the chauffeur of his means of livelihood and the pleasure driver of his means of recreation. It might be provided that deliberate reckless driving, whether of automobiles or horses, resulting in injury to person or property, should be punished by imprisonment.

"Vehicles of all kinds using the public highways should be required to carry lights at night for the protection of themselves and the public."

The Dangers of the Road.

A French automobilist gives the following interesting statistics of dangers in the road gathered in the course of 1,000 miles' travel on the public roads:

Vehivles abandoned by their drivers.....75
Drivers who refused to move out of the way 51
Drivers asleep on their vehicles..... 8
Drivers on the wrong side of the road...35
Drivers not holding the reins.....12
Vehicles without lanterns.....31
Drivers resting their horses in the middle of the road and at dangerous turnings 2
Drivers walking behind their vehicles....18
Several vehicles fastened together, and having only one lantern.....10
Saddle horses left standing.....13
Wandering dogs which had to be avoided.85

In the above list, of course, the word "vehicles" applies only to horse-drawn vehicles.

Want Busses for Ladies Only.

Motor-buses for "Ladies Only" is the latest plea in London. It is said by feminine workers and others employed daily in the world's metropolis that the struggles involved in boarding motor-buses result in ruffled hair, hats askew, and general personal dishevelment. Men, it is stated, "catch women by the shoulders, swing them to one side, board the buses, and commandeer all the vacant seats." When remonstrated with, they remark, "I have to go to work. You're only going to do silly shopping." As a matter of fact in the early morning hours most feminine motor-bus passengers are also going to business.

Hotelman Will Build his own Speedway.

From San Diego, Cal. comes the news that John H. Gay, a hotel proprietor, will build a circular-mile track at that place, to be used exclusively for automobile racing. The oval will be constructed on the Lakeside Hotel property, and, it is said, work will commence immediately.

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Chicago to Reproduce Cheshire Cheese.

Cheshire Cheese, the famous old London inn, will have a counterpart in Chicago when the new home of the Chicago Automobile club is built. The architects are at work on the plans and have decided to copy the quaint hostelry. It is estimated that the cost of the building alone will be about $75,000. When it is completed the autoists of Chicago will have one of the finest club houses and garages in the country, it is announced.

Although a site has not yet been selected it is expected a location will be decided upon in a few days.

The new clubhouse will be built of cement and rough timbers. To preserve the appearance of an old English inn it will be only three stories high. A broad porch will run across the front and a picket fence will inclose the yard. There will be forty sleeping rooms for the accommodation of the members, and a ladies' cafe in addition to the dining room. But the principal attractive place to eat will be in the old grill-room, which will be in the front of the building. Under the same room of the club house and in the rear will be the garage.

Where the Thieves are Busy.

A few years ago the safety of a car left in a busy thoroughfare was never in question, for persons of precarious honesty regarded the automobile as a dangerous weapon to the uninitiated. But now automobile knowledge is by no means unknown to the man in the street, and the feeling of awe and respect towards the automobile is passing away. That is clear by the attention that inventors have paid to the devices intended to prevent the starting of the car by anyone but the owner or his driver.

But the only danger of theft is by no means confined to the car. In some places so serious have been the depredations suffered by motorists in the pilfering of portable articles from cars left unattended for a few minutes in public thoroughfares, that local organizations in England have taken up the matter and, in one case, an automobile club has decided to employ an attorney to prosecute on behalf of any of its members who trace such thieves.

Shakespeare With a Gasolene Flavor.

Shakespeare up to date, appears in various guises according to the spirit of the times. Naturally enough, his paraphrasers of the present day devote themselves to motoring matters, but seldom with as much success as is seen in the following quotation from the Sporting Times:

"Who would hotels bear,
To sweat and grunt under a garage fee,
But that the dread croppers after dark,
The unexpected contour from whose slopes
No motorist returns, incurs their bills,
And makes us rather funk those hills we have
Than fly down others that we know not of?"

Quakers Travel 1000 Miles Non-stop.

Bespattered with mud, but otherwise in as good condition as when it left the garage, a 1906 model 30-horsepower Peerless touring car, was driven into the garage of the Eastern Automobile Co., at 324 North Broad street, Philadelphia, Wednesday night of last week, having completed a noteworthy non-stop run of 1,062 miles.

The car, which previously had been used for demonstrating purposes by the Philadelphia agents, set out on Monday, 1st inst., to make a 1,000 mile non-stop run, with W. H. Savage at the wheel and carrying four passengers. The course was from 324 North Broad street to the old York road to Ogontz, thence to Fox Chase, Rhawn street, to Castor road, over the Bustleton pike to Grant avenue; thence to Torresdale, Holmesburg, via Church road, to Ashbourne, returning by York road and Broad street to the garage, a distance of about 36 miles. The trip was made in twenty-eight relays. The route was particularly trying, for there are more than a score of stiff hills to climb, a dozen bridges, numerous stretches of cobblestone and three railroad crossings. The weather conditions for the first two days were all that could be desired, but on Wednesday the men had to drive through a steady downpour of rain and over ice covered roads.

During all this time the motor was not stopped once, and at no time was the car without its full capacity of five passengers. During the run of 1,062 miles 91 gallons of gasolene and two gallons of cylinder oil were consumed. The cost per mile, therefore, was 1⅛ cents, or $.0036 per passenger.

Diamond tires were used and not a puncture or blowout occurred. The car finished with the same set of tires as was put on at the start.

The official relays, giving the number of miles and driver, follows:

1, 72.3 miles, H. W. Savage; 2, 108.3 miles, J. R. Maynes; 3, 144.2 miles, H. W. Savage; 4, 180.2 miles, J. R. Maynes; 5, 216.2 miles, H. W. Savage; 6, 252.1 miles, J. R. Maynes; 7, 288.1 miles, H. W. Savage; 8, 324.1 miles, H. W. Savage; 9, 360.1 miles, J. R. Maynes; 10, 396.1 miles, J. R. Maynes; 11, 432.1 miles, H. W. Savage; 12, 463.2 miles, H. W. Savage; 13, 468.2 miles, H. W. Savage; 14, 540.2 miles, J. R. Maynes; 15, 576.2 miles, H. W. Savage; 16, 612.2 miles, H. W. Savage; 17, 648.4 miles, J. R. Maynes; 18, 684.5 miles, J. R. Maynes; 19, 720.6 miles, H. W. Savage; 20, 756.7 miles, H. W. Savage; 21, 792.7 miles, J. R. Maynes; 22, 828.7 miles, J. R. Maynes; 23, 864.8 miles, H. W. Savage; 24, 900.9 miles, H. W. Savage; 25, 937 miles, J. R. Maynes; 26, 973 miles, J. R. Maynes; 27, 1,009.1 miles, H. W. Savage; 28, 1,062 miles, H. W. Savage.

When Russel Sage was in a hurry to get to his office in answer to the demand for call money the other day he used an automobile. With its assistance he succeeded in clearing $70,000.

Where Oiled Roads are General.

California has nearly 3,000 miles of roads which have been transformed from dusty, and often almost impassible highways, into excellent avenues by the use of crude petroleum as a road dressing.

Out of the fifty-seven counties of the State, at least forty now have oiled roads; the use of oil on roads is as much adapted to cities as to the country, and there are over 500 miles of city streets treated in this manner. There are also nearly 1,100 miles of oiled railway roadbed in the State.

The first experiment in oiling roads began in 1898 and it was found that when oil was applied it immediately began to bind together all the loose particles and formed a stratum resembling asphalt.

California now occupies a foremost position as regards mileage of good roads, as a result of this successful method of treating highways.

As an Aid to Church Fairs.

Now the automobile has entered the precincts of the time-honored church fair. At this season of the year these functions are many, and the innovations that have been introduced have been innumerable, but it remained for the Baptist Church of Brookline, Mass., to introduce the automobile. One of the parishioners loaned his machine and chauffeur to the fair management, and nightly sight-seeing tours of Brookline are being made. The fee charged is 50 cents a person, and the income of the fair has been materially increased by the use of the horseless vehicle.

How the Kidnapper was Caught.

Enoch Coffey, a Kansas man, kidnapped his brother's boy at Kenesaw, Neb., and boarded a train with him. He was observed by the boy's father just as the train was pulling out. The father immediately secured the assistance of an expert motorist and together they climbed into a substantial touring car, which belonged to a friend, and which happened to be standing nearby. For thirty miles the race between the train and auto continued—and the automobile won, with the result that the father secured his son and the arrest of the kidnapper.

Shirts will Hold the Money.

Although it does not conduct a haberdashery, the Hamilton County Automobile Association of Noblesville, Ind., has about it something that savours of gentlemen's wearing apparel, Brown Shirts being included in its officiary. At the last meeting Horace Brown was elected president, Elbert Shirts, treasurer, and Dr. H. S. Harrell, secretary.

Pine Bluff Motorists Organize.

Pine Bluff, Ark., motorists have organized as the Pine Bluff Automobile Club, with the following officers: President, Dr. R. G. Thompson; vice-president, J. M. Parker; secretary-treasurer, L. O. Knox.

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Factors that Affect Power

Well may it be said that there is no consideration of greater importance to the motorist than that of the disposition of the power of his car, yet it is safe to say that not one in fifty of the men who are intimately familiar with the action of the motor car are able to account for the output of energy from the motor, telling in so many words just what becomes of it. It is indeed an important consideration, for it involves, when taken up in detail on an analytical basis, a thorough comprehension of all that transpires in the mechanism under all sorts of conditions, and also a thorough understanding of the purely mechanical principles which are involved in the transformation of the dormant energy which is stored up in the limpid fuel to the snappy propulsive effort which acts at the driving wheels, in dragging the machine along over the road, and, indeed, a knowledge of just how that effort is to be accounted for in pounds and ounces, and what becomes of it ultimately.

Naturally enough, a complete analysis of the many different forces which are brought into action in the propulsion of the motor car is an extremely difficult thing to accomplish, because of the infinite number of extraneous conditions which are to be taken into account. But it is possible by making liberal allowances for some of them, and by making one or two rather sweeping and inclusive assumptions, to arrive at a demonstration which shows pretty clearly what becomes of the power, and shows it with sufficient accuracy for all practical purposes. In doing this, it is better to consider merely the transformation of the potential energy which is served up by the motor, and to show the method of its absorption by the various parts of the mechanism and finally by the forces outside of the machine, and to consider the motor itself as delivering a certain known amount of actual or brake horse power, rather than to go back to the fuel itself and follow its combustion and the resulting impulsive effort through the mechanism of the motor itself. So that any reference to efficiency in the following paragraphs may be taken as indicating a purely mechanical quantity, and totally apart from the consideration of the heat transfer within the motor, or to its own ratio of mechanical transformation.

The disposition of the power of the motor may then be accounted for in five different ways, since there are five distinct and different groups of factors which combine to absorb the effort delivered at the crank shaft. They are (1), the losses due to internal resistances in the machine, (2) the losses due to rolling friction, or, roughly speaking, the resistance which is offered by the road to the passage of the wheels, (3) the losses due to the gradient or inclination of the road, which are sometimes positive and sometimes negative, (4) those losses which are caused by curves in the road, and (5) the losses due to wind resistance. Each of these groups is very comprehensive, and involves numerous considerations which do not appear at the outset, the entire quintet combining to form in the aggregate a problem which in novelty and complexity is probably without equal anywhere in the entire field of mechanical engineering. To reduce each to an entirely accurate quantitative value for any general or specific case is well nigh impossible at the present time, and, indeed, certain of the factors involved are of such a nature that they can only be got at by methods of approximation, and that by experiment rather than close calculation. Fortunately, however, these are such as have but a slightly important bearing upon the really significant matters connected with the design and construction of the machine, and hence are more useful in the discussion of theories than in the real life of the motorist.

Those losses in power which are due solely to the internal resistances of the machine are accounted for in the friction of the various bearings and the power taken up by the gearing. These, of course, vary exceedingly with the type of machine, the sort of care which is normally given to it and the sort of lubrication which is accorded it. Without going too deeply into the detail of the matter, suffice it to say that, according to tests made at different times and under various conditions, the efficiency of the transmission varies from 50 to 75 per cent. ordinarily. That is to say, the power which is available at the rear wheels of the car is from 50 to 75 per cent. of that which is actually delivered by the motor at the crankshaft. This quantity varies not simply with the age and condition of the parts, but also with the arrangement of the speed changing gear, since, for different speeds, different numbers of gears are used thus offering resistance to the effort of the motor. Some difference also is occasioned by the nature of the final drive, the efficiency of the double chain method of transmission being probably very high when the chains are new and free from dirt, and falling to a considerable lower figure when they become fouled, as they soon do on the road. With the cardan shaft drive, on the other hand, the efficiency which may be very high when the machine is standing upon jacks, or running on perfectly level roads under normal load, is considerably affected by the oscillation of the springs, and may fall considerably under such circumstances.

The question of the resistance of the road which has to be overcome by the wheels involves not simply the condition of the road, whether it be wet or dry, rough or smooth, and soft or hard, but as well the condition of the tires and their size, and the diameter of the wheels. Moreover, the question is not a little affected by the resilient quality of the tires and the fact that under the driving action of the transmission they tend to surge or drag upon the rim, at times working backward and forward under the action of the driving force, all the time bulging at the tread and receding as the springs oscillate, thereby constantly altering their cross section and materially affecting the friction of the road. Without going into the considerations which are involved in this way, suffice it to refer to the recently quoted experiments of Churchward which were published in these columns, in which all these minor tributaries to the rolling friction were grouped under the single head of "drawbar pull"—a quantity which is well known in railroad work, and represents simply the amount of effort which must be exerted upon the car from any source whatever in order to drag it at the speed indicated under the known governing conditions. These results, though purely empirical, are fully as accurate as could be arrived at in any other way, and cover all ordinary cases with sufficient precision for all practical purposes.

The effect of the gradient upon the propulsive effort of the motor is precisely the same as though the work were done in raising it vertically to a height equal to that of the hill or grade, and then driving it along a perfectly level stretch of road equivalent in length to that of the incline. That is to say, the hillclimbing effort may be divided into two parts, and the total effort will be that which would be necessary to drive it along the level for a distance equal to that of the incline, plus the number of foot-pounds necessary to raise it to an equal height. Similarly, in descending a grade, the power consumed is equal to that necessary to propel the machine on the level, minus that which would be consumed in raising it. Hence, when the grade is of

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sufficient pitch to make the vertical components of the actual propulsive force, or the force which would be necessary to lift the car vertically, equal to or greater than that which is required simply to move it on the level, the machine will run of its own accord and the service of the brakes must be called into requisition in order to stop it.

To the average driver of a motor car it would hardly seem possible that the curvature of the road could have any possible effect upon the force used in driving the car, the idea of a resistance due to curvature being an entirely novel one, and one which is not self suggestive. The actual value of this quantity is, however, comparatively slight, as the provision of a balance gear or differential in the driving axle allows for the rotation of the outer and inner wheels at different speeds consequent upon the varying lengths of their respective paths on the curve and the chief factors to be encountered are those due to the added internal resistance of the differential mechanism, which is normally out of action, and the increased rolling friction of the tires due to the change in their direction of motion. Added to these, in the case of any close calculations, would be the gyroscopic effect due to altering the planes of rotation of the various wheels of the machine, an effect which is far too complicated to be understood in the net effort of its resultant, and one which is of rather doubtful magnitude under ordinary conditions.

In a recent article in the Motor World the question of wind resistance was taken up in a general way, and the great variation in its effect illustrated, as well as the fact of its tremendously increased importance when high speeds are to be taken into account. In this connection, then, it is enough to recall the fact that the windage is proportional to the square of the velocity of the car, and that its actual value for any given case is equal to .005 of the square of the velocity expressed in miles per hour, the result being expressed in pounds resistance per square foot of effective surface presented to the wind. Needless to say, this quantity is vastly affected by the direction and intensity of the external wind, which in this way sometimes acts as a help and at others as a hindrance to the progress of the car. When there is a following wind, its effect upon the total amount of surface presented by the car should be subtracted from that which is due to the velocity of the car itself, or, in other words, the wind which the car itself is creating due to its motion. In the case of a head wind, on the other hand, this factor should be added to the resistance due to the motion of the car. From which it will appear that the effect of the windage may have a much more important bearing upon the performance of the machine than at once would be indicated by the simple law of the square of the velocity.

By way of illustration of the foregoing, the example may be taken of a hypothetical car which may be supposed to move on a windless day along a perfectly level asphalt road of uniform surface. This car is of the typical order, is rated at 20 horsepower, weighs 1,900 pounds, and may be supposed to present a total area of 16 square ft. when carrying four passengers. The combined weight of this load, at an average of 150 pounds per passenger, is 600 pounds, thus making the weight on the tires 2,500 pounds. When running on the high speed this machine has a direct drive through the counter shaft, and a final transmission by double chains to the rear wheels. By this arrangement, the driving effort of the motor is carried to the wheels through the medium of one pair of bevel gears and one pair of chains, no other possible sources of internal resistance being present except the bearings of the transmission. Then, supposing that the efficiency of the bevel gears be taken as 85 per cent., and that of the chains, when running in the best of condition, as 90 per cent., the total efficiency of the transmission would be .85x.90 — .765, or 76½ per cent. These allowances may be fairly liberal, or according to the opinions of some engineers, they may be rather low, but they represent the average of several results, and may be taken as accurate enough for purposes of illustration. Then, selecting the resistance of the bearings, which in this car, are supposed to be of the latest ball-bearing type, and consequently "frictionless," the power available of the rear wheels, will be 76½ per cent. of 20, or 15.30 horse-power. Thus, about one-quarter of the power has been used up before the serious business of propelling the car has been even attempted, and indeed, some authorities place it is high as one-third on the average.

Now, suppose that this little car is traveling along the ideal road at the rate of 3,000 feet per minute, or about 34.09 miles an hour, the drawbar pull, according to Churchward, is something like 60 pounds per ton, which, since the car and its load weighs a ton and a quarter, amounts to 75 pounds. The windage, that is to say, the resistance due to the motion of the car through a body of stationary air at this speed, is equal to 5.75 pounds per square foot, or expressed in its total as applying to the entire surface presented by the machine and its occupants, is equal to 92 pounds. These two amounts, the drawbar pull, and the windage, being added, give a total of 167 pounds which represents the amount of effort which must be applied at the imaginary drawbar, in order to secure the desired effect. This force must be applied through a distance of 3,000 feet per minute, in order to attain the desired speed, and the product of these two is the number of foot pounds of work, which must be exerted at the drawbar per minute in order to propel the machine. Now the value of the horse-power is defined as being equal to 33,000 pounds per minute, and hence, to find the horse-power necessary to propel the machine under these ideal conditions, it is necessary to multiply force necessary to move the car, by the distance in feet per minute through which it acts, and to divide this by 33,000, or;

$$\frac{167 \times 3{,}000}{33{,}000} = 15.18 \text{ h. p.}$$

That is to say, 15.18 horse-power will be necessary to propel the car at the rate of 34 miles per hour under these conditions, and as the amount of power available at the rear wheels is 15.30, it is evident that the difference of .12 horse-power represents the amount of extra power or possible accleration available when the motor is doing its full rated work.

By comparing the five sources of loss or absorption of power, especially considering those conditions which relate solely to factors of resistance external to the car, namely, the rolling friction, the factors of curvature and gradient, and the wind resistance and taking into account the fact that no road, no matter how good it may be when judged according to the criterions of highway construction, is absolutely uniform in its conditions, absolutely straight and uniformly curved in its course, or of absolutely uniform grade for any considerable distance, it will be seen that these factors must be constantly varying throughout a wide range, and that they must be as hard to determine with even a fair degree of accuracy, as they are to provide against in the construction of the machine.

Moreover, when it is considered that in addition to this extremely variable load which is thrust upon the motor and all its subjoined mechanism, thereby creating in it a multiplicity of stresses which are not all germane to its primal function, but rather serve as a very important hindrance to its action, the machine as a whole, is being thrust ahead and jolted over a surface of constantly altering quality, and is being forced to adapt itself to the conformation of the road without in the least disturbing the proper relation of any of its parts or interfering with their action, the greatest wonder of all is that the machine can be made to go at all. The greatest wonder is that it does not come to grief at the first mole-hill and fall in a heap. And then there comes a wave of the profoundest respect, almost of awe, for the man who has been able to contrive and achieve albeit through the assistance of hundreds of other men to be sure, but none the less by means of his own grey matter, a really successful motor car.

H. P.

Thomas Higginbotham, a repairman, of Waukegan, Mich., has learned that "there's many a way to turn an honest penny," and at the same time learned some of the utilities of the gasolene motor. Now that the condition of the roads prevent his driving his car with comfort, Higginbotham has jacked up his car and attached a chain from the sprocket to an emery wheel. He claims he is able to sharpen skates more rapidly and with less muscular energy than formerly.

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PRIZES FOR SELF-STARTERS

Paris Contest Results in a Tie—Many of the Devices Fail Utterly.

In explanation of the number of self-starting appliances which made their appearance at the Paris salon, and to which detailed reference was made in these columns last week, it is said that they were the result of the offer of a prize for the most efficient device of this kind put up by M. Deutsch. No less than 17 different devices were entered for the contest, but only 11 put in appearance

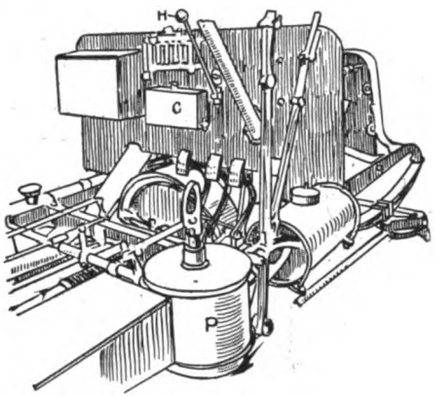
In the opinion of the judges "Le Cinogene" and the Mors self-starters were tied for first place and accordingly divided the grand prize between them. The first named, has been on the market for some time and probably has been more widely tested than any of the others. It consists of a drum in which liquid carbonic acid gas is stored under pressure, in connection with a small motor which is attached to the crank shaft at the place usually occupied by the hand crank. The expansion of the gas in the cylinder moves the piston and this in turn actuates the shaft through the medium of a rack and pinion. The piston is automatically returned to the end of the cylinder by a spring upon the escape of the spent gas.

The Mors consists of a special carburetter and pump connected with the cylinders by means of which the driver may put a charge under compression in any of them. The operation is completed by switching on the current.

The Saurer, which is designed only for four-cylinder motors, consists of a device for injecting compressed air into the particular cylinder of the engine that is about to commence its downward stroke. The Renault also uses compressed air, but in conjunction with a small independent motor.

The Battault is a sort of motor gun. A percussion cartridge produces a powerful impulse which causes a flywheel in the "gun" to revolve and the latter imparts its motion to the crank shaft of the motor. This is by no means a new idea as both the "match" and "gun" ideas have been employed on large motors which could not be started by hand under any circumstances. But it has always been in direct connection with the engine and not as an independent device that they have figured.

The Sjilsky enables the driver to turn the crank shaft from over the seat by means of levers, as in the Richard Braisier and the Genevrier. In the Guerrard, pressure from the exhaust is stored and re-expended to give the start. The same idea is taken advantage of in the Pellorce, except that it takes the form of a dynamo and set of accumulators to store the energy. The dynamo gives the engine its initial impulse. In the Buisson et Renardy, a pedal arrangement connected with the shaft through a ratchet and lever is employed. The Lemale is the only one of the spring type and was granted the third prize. It consists of powerful helical spring automatically wound by the motor, a ratchet and pawl preventing overwinding, and is of a type that has been shown in this country some time ago. The Phillipe consisted of a small turbine motor adapted to be moved by carbonic



MORS SELF-STARTER.

acid, compressed air or water under pressure.

In the tests, the Guerrard and Genevrier failed to start the engine at all while the remainder functioned with more or less success. "Prizes of encouragement" were also awarded the Saurer and Pellorce by the jury.

Contest for Town Cars.

The contest for automobiles for town use was conducted by the Automobile Club of France, in Paris, was decided on the 21st. and steam cars, the other for electric vehi- There were two classes, one for gasolene cles, each being subdivided into four classes on a price basis. The cars were required to cover a circuitous course of 100 kilos (62½ miles) in turns, the awards being based on regularity of running, fuel consumption, comfort and elegance and finish of the body work. The competition started at 6 a. m., with 27 starters. Of these 21 finished before 1 p. m. The first prize was awarded to an Aries car in the first class, the running time of which was 3 hours 56 minutes 42 seconds. A Vedome took honors in the electric class. Its time was 4:33:12.

Wherein American Makers are Ahead.

With the steam hammers of three and four thousand pounds that are being put in some of the leading automobile factories it is claimed that no small fractures or flaws are possible in forgings, which is a big advantage over the methods pursued in some foreign factories, where the forgings are made almost by hand, the workmen using small hammers. Visitors to Europe say there are many ways in which American manufacturers lead the foreigners now, especially in the making of parts by machinery, which is much more accurate than that done on the other side by hand.

IMPROVEMENT IN IGNITION

How it Evolved from the Hot Tube and the Tendencies of To-day.

Discarded by makers with one accord but a few years ago as only being suited to the requirements of the slow speed engine, the low tension, make and break system of ignition is again in the ascendant and its prevalence on this year's models exhibited at Paris may well be put down as one of the most noticeable developments of general acceptance. When the internal combustion motor was first settled upon as the power of the motor car of the future, the designers of the latter found it in a rudimentary state, particularly with regard to the system of ignition employed.

Probably the pioneer method of exploding the charge was the Otto slide valve used in connection with an open gas flame —obviously one totally unsuited to the needs of the motor car. There appears to be some uncertainty as to the chronology of the invention of the various systems of ignition, but in all probability the hot tube method followed the use of the pocketed flame, of which it was a consistent development. Whether the discovery of the catalytic method preceded or was approximately coincident with that of the use of an electric current for the purpose is unimportant, but these, supplemented by spontaneous combustion through high combustion comprise the catalogue of known methods.

No attempt was ever made to employ Otto's invention on the automobile motor, the hot tube used on the first Diamler and Panhard motors marking the pioneer application of any system in this role. It is hardly necessary to state that its use was open to numerous objections, not the least of which was the necessity of heating the tubes prior to starting and the cooling effect of the wind upon them, frequently reducing the temperature to a degree that prevented the occurrence of the explosion. A few missed explosions allowed the tube to cool so much that reheating was necessary. In the light of present day advances this all reads like ancient history, but it is surprising to recall that the hot tube was retained on the Panhard car as recently as 1902.

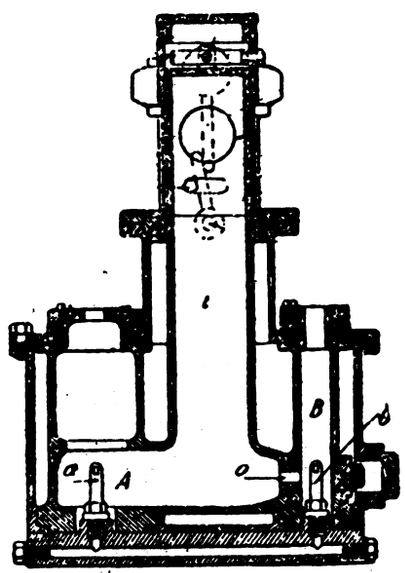
So far as known this method was not experimented with for automobile use in this country. It was prevalent on stationary engines at the time the investigators first took up the problem of applying the gas engine to the motor car, but even in that field, it then had a competitor in the shape of the electric current. Credit for the development of the latter in this connection must really be accorded the marine engine designer. Being the only practical method that lent itself readily to his needs, the use of a spark caused by suddenly separating

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or wiping two contacts, was for a number of years standard on small boat motors.

Some automobile engine builders followed the lead thus set, while others started right at the outset with what has come to be known as the jump spark, and it was not long before the latter had the field entirely to itself. Crudity of design brought about the downfall of the make and break system at that time and it is not to be wondered at that methods and apparatus suited to the requirements of low powered and low speed motors should have proved inedaquate when transferred to a sphere imposing so much greater demands upon them. Lack of suitable means for advancing and retarding the time of ignition was a further drawback and burdened with these disadvantages the system fell into disuse. But the jump spark system has fallen short of fulfilling the bright promise held out by it and while marking the greatest advance yet made, it appears that its erstwhile predecessor is capable of development to a degree greatly surpassing it in simplicity and reliability. Hence its recrudescence which bids fair in the course of time to put it at the head of the list.

FIG 1



C. G. V. CARBURETTER.

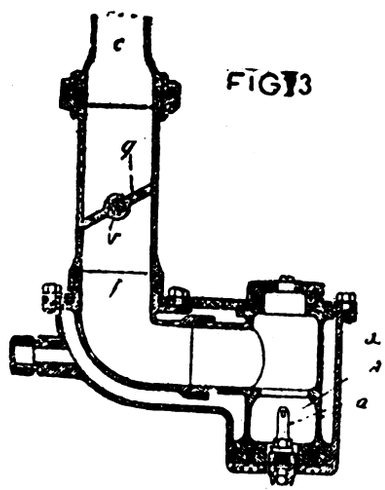
Rather a novel variation of the principle of providing as great an amount of radiating surface exposed directly to the air in a muffler is embodied in what is termed the "radio" silencer, of British origin. It consists of six tubes a foot or more in length with their open ends terminating in aluminum exhaust chambers, the whole being bound together by a bolt passing longitudinally through the center. In appearance it resembles a miniature steam radiator more than anything else. The exhaust enters at one end and traverses the length of all six tubes in rotation before issuing. It is claimed to give a perfect scavenging action.

SPRAYING THE GASOLENE

Multiple Nozzles now Coming into Use—One of the More Recent Creations.

Following the lead of other Continental designers, the builders of the C. G. V. cars have adopted a multiple spray nozzle type of carburetter, though it is interesting to note that while such makers as Renault and Diamler have adopted no less than four independent outlets for the fuel into the mixing chamber, in this instance but two are relied upon.

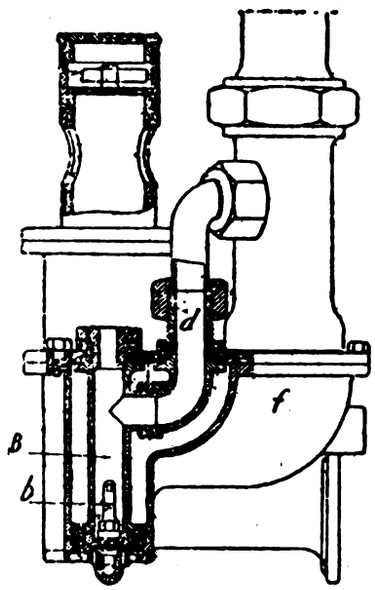
One of these is naturally the normal outlet which is at all times open and is sufficient to supply the needs of the motor while running light. This jet is likewise always open to the air on one side and to the suction of the motor on the other. To augment the speed the usual accelerator pedal is employed and in this instance controls the air-outlet and suction passage of the larger jet simultaneously, which immediately puts the latter into play. A hand regulator is further provided in reach of the driver by means of which the suction of the motor may be placed in communication with the chamber of the larger jet by a single movement. The speed may be varied to any point within the range provided merely by depressing the accelerator pedal more or less.



C. G. V. CARBURETTER.

Both nozzles are connected to a common float feed chamber maintaining a constant level, this part of the apparatus not being shown in the accompanying drawings. The relative positions of the two jets as well as their connections are made plain in the sectional elevation, Fig. 1. A and B represent the respective mixing chambers and ab the jets proper. A better idea of the general arrangement of the various parts may be had by reference to Fig. 2. In this partial section it will be noted that the tube D connects the mixing chamber of the smaller nozzle to the common intake f, to which it is attached as a branch. The larger tube f opens in direct communication with the cylinders through a manifold attached at c. In order that the small spray may be worked independently, a flap valve g is provided in the main inlet f below the point where d enters it. This arrangement is made clear in the sectional elevation Fig. 3. By closing this flap valve the suction of the engine can only reach the small nozzle, thus cutting off the other one. As the small chamber is always in direct communication with the outer air it may thus be readily isolated. But in case the air inlet of the large jet has not been closed entirely the two mixing chambers A and B communicate with one another through the small opening o, fig 1,

FIG 2



C. G. V. CARBURETTER.

and a sufficient quantity of air thus reaches B without in any way diminishing the pressure in chamber A. The air inlet of the large chamber consists of a tube rising above it and which is pierced with a number of holes. A cylindrical cover pierced with holes to correspond is so arranged as to be revolved. This cover is held in place by the tension of a spring bringing it against a stop in which position it closes the air inlets to a great extent. The flap valve g in the fuel outlet proper and the air inlet k are controlled simultaneously in the following manner.

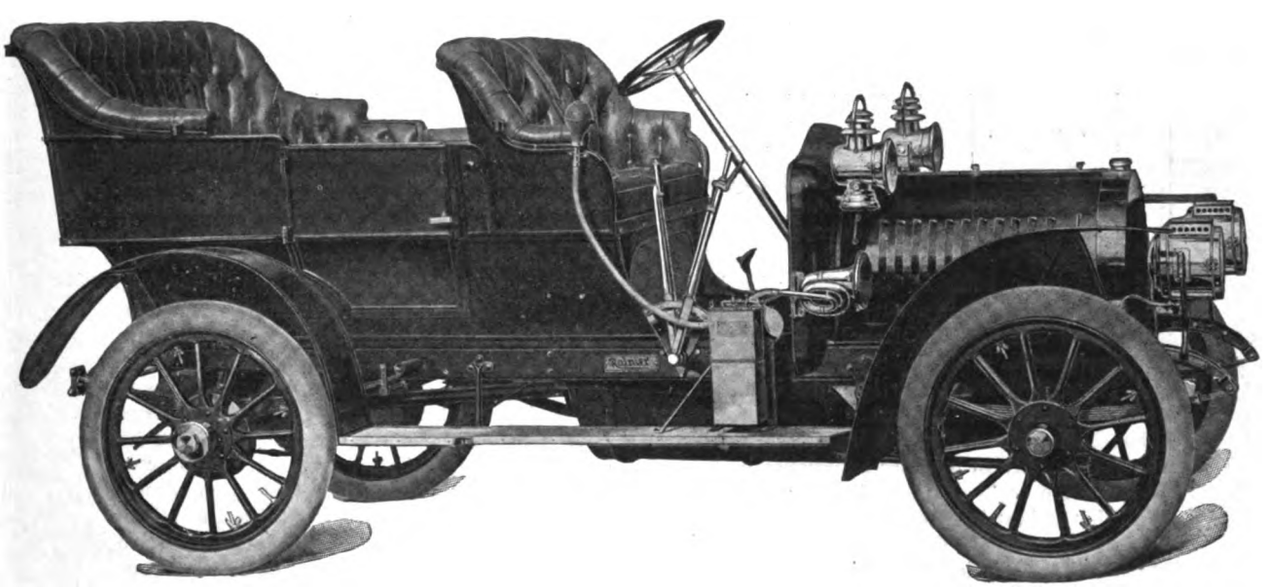
On the axle of the flap valve g, is fixed on the outside, on one side, a regulating lever s connected with a regulating pedal, and on the other side is a second lever t. On the other part and on a protruding point on the outside of the cover k a curved finger v has been fixed, which can place itself in theway of the circular movement of the lever, as can be seen in the illustration (Fig. 1.) As soon as the automobile driver moves therefore the lever s by means of the intermediation of the pedal, a simultaneous opening of the flap g and the rotation of the cover k takes place, and this allows the air to enter. The more the pedal action ceases to work on the lever, the more it closes the flap, and at the same time the spring turns the cover in the reverse direction and places it at rest.

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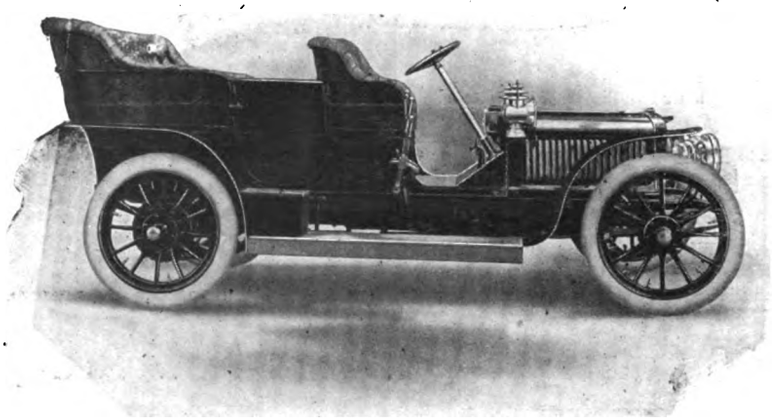
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The Week's Patents.

808,622. Friction-clutch. Frank H. Ball, Plainfield, N. J. Filed June 29, 1903. Serial No. 163,608.

Claim.—1. In a friction clutch the combination of an annular friction-surface a split friction-ring adapted to act on said surface; a carrier for said split ring, the ends of said ring having a limited circumferential movement on said carrier; and mechanism for actuating the free end of the ring to set the clutch, each end of the ring being adapted to become either the driving or free end according to the direction of movement of the clutch the ring being driven with a clutch moving in one direction from its end.

808,625. Construction of Wheels. Thomas R. Beaumont, Park Place, London, England. Filed November 29, 1904. Serial No. 234,775.

Claim.—1. In a wheel in which a segmental wooden felly is surmounted by a metal tire, a wedge-shaped plug between adjacent segments of the felly; removable adjustment-liners between the outer end of the plug and the tire, a bolt countersunk in the tire and threading the said liners and plug, and a nut on said bolt engaging over said plug; substantially as described.

808,732. Change-Gearing. Castor H. A. Dissinger, Wrightsville, Pa. Filed October 1, 1903. Serial No. 175,293.

Claim.1. In a change-gearing wheel provided with a series of eccentric pins, an engine-shaft, a clutch-drum and a clutch member on said shaft, said clutch-drum having connections with the pin-provided wheel, a pinion adapted to engage the pins, a lever for shifting the pinion, and springs to automatically throw the device out of operation when the lever is released.

808,765. Wheel Structure. Joseph Ledwinka, Detroit, Mich., assignor of one-half to Charles Berg, Cleveland, Ohio. Filed September 10, 1904. Serial No. 223,956.

Claim.—1. In a wheel structure, the combination with a suitable rim, of a tire secured thereto and consisting of fibrous material divided into two sections in a plans traverse relatively to the wheel-axis, the fibers of one portion being inclined, with reference to said plane, in one direction and the fibers of the other portion being inclined in the other direction, said two sections forming the complete tire.

808,769. Power-Transmission Device. George W. Marble, Chicago, Ill. Filed December 15, 1904. Serial No. 237,011.

Claim.—1. The combination with a motor-shaft, of a plurality of pairs of shafts driven therefrom, the shafts of each pair being driven oppositely, a plurality of driving friction members on said shafts, a driven friction member adapted to be engaged by either of the driving friction members of one pair of shafts in driving and of another pair in reversing, a driven shaft, and an operative connection between the same and the driven friction member.

808,779. Electric Generator. Benjamin P. Remy and Frank I. Remy, Anderson, Ind., assignors to Remy Electric Company, Anderson, Ind., a Corporation of Indiana. Filed May 27, 1905. Serial No. 262,668.

Claim.—In an electric generator, the combination, with stationary poles, of a pair of annular segmental poles journaled within said stationary poles and provided at the ends with journal-bearings, an armature mounted within said annular poles and having shaft-sections journaled and supported in the journal-bearings of the annular poles, means by which the armature may be angularly moved within the annular poles, and means by which the annular poles may be shifted within the stationary poles.

808,828. Cover for Vehicles. William Findlay, Edinburgh, Scotland. Filed December 6, 1904. Serial No. 235,685.

Claim.—In a device of the character described, the combination of a plurality of stationary tubular pillars, tubes telescoping in said pillars and adapted to be raised and lowered therein, a casing connecting a pair of said tubes and permanently secured thereto, a pair of supplementary casings hinged to opposite ends of said first-named casing and adapted to be swung out from said casing, spring-actuated rollers in each of said casings, and covers wound on said rollers and adapted to be unwound therefrom.

808,902. Gas-Engine. Newton Crane, Boston, Mass., assignor to Newton Crane Gas Engine Co., Boston, Mass., a corporation of Maine. Filed May 23, 1903. Serial No. 158,420.

Claim.—1. An engine comprising communicating cylinders forming the sides of a polygon, and double-acting pistons in said cylinders.

808,915. Carbureter and Igniter for Hydrocarbon Engines. Arthur B. Goodspeed, East Orange, N. J., assignor to Industrial Development Co., New York, N. Y., a corporation of New York. Filed March 10, 1904. Renewed June 9, 1905. Serial No. 264,531.

Claim.—1. An igniter for internal combustion engines, etc., comprising a shell for external contact with the charge to be ignited and communicating internally with the external air and a carbureter and burner placed within said shell and comprising alined tubular members connected respectively with a hydrocarbon-supply and an air-supply and terminating centrally within said shell and means for spreading radially the burning gases, substantially as described.

808,958. Spark-Ignition System for Explosive Engines. Richard Varley, Englewood, N. J., assignor to The Autocoil Company, a Corporation of New Jersey. Filed March 28, 1905. Serial No. 252,458.

Claim.—1. In an ignition system for explosion-engines, the combination of an induction-coil, an igniting device, and means whereby according to the speed of the engine a single spark or a series of sparks will be created at the igniting device.

808,965. Clutch. Roy L. Woodard, Richburg, N. Y. Filed January 31, 1905. Serial No. 243,523.

Claim.—1. The combination of a clutch, of a shaft, a loose pulley mounted thereon and having a perforated rib, a collar rigidly secured to the shaft, a plurality of arms projecting from the collar and provided with laterally-extended brackets, radially-moveable pins guided by the arms and provided at their outer ends with tool-engaging surfaces accessible through the perforations of the pulley-rim, said pins being provided with peripheral threads, clutching-shoes having threaded openings for the reception of the threaded portions of the pins and provided with lugs engaging said brackets to prevent independent turning movement of the shoes, said pins being independently adjustable with relation to the shoes to which they are attached, clamping-nuts mounted on the pins for holding the shoes in adjusted position, friction-blocks carried by the shoes, and means for operating the pins.

808,974. Protector for Pneumatic Tires. Henri David, Paris, France. Filed January 20, 1904. Serial No. 189,856.

Claim.—An antislipping, removable protector for pneumatic tires, comprising a series of independent narrow metallic strips secured upon and extending traversely of the tire, each of said strips being bent at two points to form a central tread portion and diagonally-arranged substantially straight sides having eyes at their extremities and fastening means passed through said eyes to hold the strips upon the tire.

808,975. Friction-Clutch. Hermann G. Dittbenner, Minneapolis, Minn., assignor to Diamond Iron Works, a Corporation of Minnesota. Filed August 29, 1904. Serial No. 222,500.

Claim.—1. The combination, with a shaft, of a loose pulley thereon, a member fixed on said shaft and having a surface to be gripped, arms pivoted on said pulley and provided with gripping-blocks to engage said member, a sliding sleeve, plates pivotally connecting the ends on said arms, and links pivotally connecting the ends of said plates with said pulley and said sleeve, the links between said plates and sleeve being substantially at right angles to the latter when the clutch is locked.

809,019. Device for Calculating Horse-Power. Eugene M. Scoville, Wipahu, Hawaii. Filed January 31, 1905. Serial No. 243,497.

Claim.—1. A calculating device comprising a pair of scales, one being provided with a stationary gage-point, and a slide having a scale adapted to register with one of the first-mentioned scales and provided with a rider slidably mounted thereon and adapted to register with the other stationary scale and with the gage-point.

809,040. Vehicle-Wheel. Manuel G. Babio. New York, N. Y.. Filed March 6, 1905. Serial No. 248,479.

Claim.—1. In vehicle-wheels, an inner and an outer hub, one mounted loosely around the other, said outer hub being provided with gearing on the peripheral surface of the inner rib of the hub, a circular pneumatic tube fitted in the outer hub and having constant bearings upon the main hub by means of an endless band intervening between the two, a hollow bolt in connection with said pneumatic tube, and chains connecting the two hubs, which chains are in independent series, acting in opposite directions.

809,081. Internal-Combustion Engine. Sydney S. Williams, Chicago, Ill. Filed September 2, 1902. Serial No. 121,746.

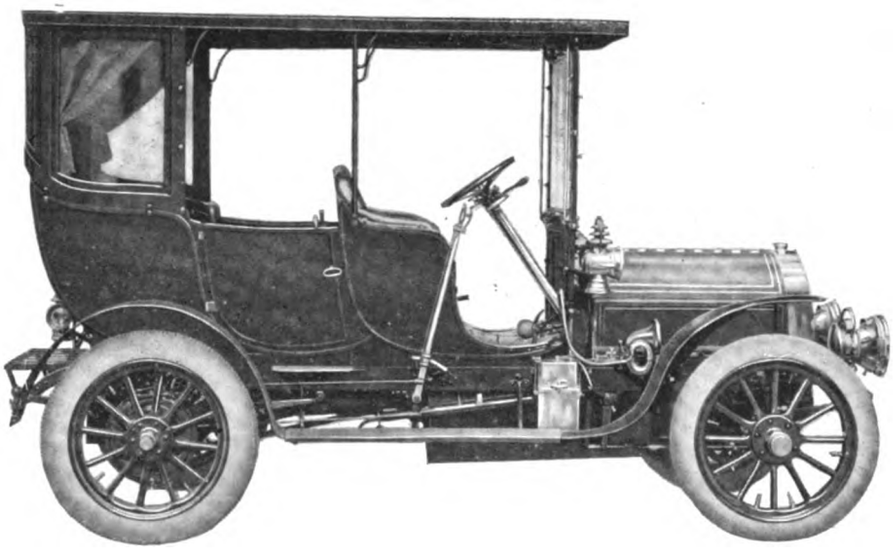
Claim.—1. In an internal-combustion engine, the combination of a cylinder having a piston, a plurality of ignition-chambers each communicating with both ends of the cylinder, and valves controlling the communications of the chambers with the cylinders.

809,082. Internal-Combustion Engine. Thos. Wright, Jersey City, N. J. Filed February 17, 1904. Serial No. 193,961.

Claim.—1. In an internal-combustion engine, the combination of a plurality of working cylinders, a plurality of pump-cylinders arranged alternately with respect to the working cylinders, a crank-shaft common to all of the cylinders, means for supporting all of the cylinders to turn around the center of said shaft, pistons operating in the cylinders, connections between the pistons and the crank, means controlling fluid movement between the various cylin-

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Los Angeles,	Bush & Burge, Cor. 7th & Main Sts.	Springfield, Mass.,	E. R. Clarke Auto. Co., 117 Lyman St.
Louisville,	The Zorn-Strauss Co., Inc.	Syracuse,	Amos-Pierce Auto Co., 109 S. State St.
Milwaukee,	Hibbard Automobile Co.	St. Louis,	Western Auto. Co., 4701 Washington Blvd.
New York,	Harroids Motor Car Co., Broadway, 58-59th Sts.	St. Paul,	C. P. Joy Auto. Co., 368 Minnesota St.
Ottawa & Montreal,	Wilson & Co., 142 Bank Street.	Toronto,	Auto & Supply Co., Ltd., 24 Temperance St.
Oakland, Cal.,	The George N. Pierce Co., 1013 Clay St. (Wholesale)	Troy, N. Y.,	Troy Auto. Exchange, 22 4th St
		Utica, N. Y.,	Utica Motor Car Co.

PIERCE

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ders, said means comprising connections between the pump-cylinders and the two working cylinders adjacent thereto, and valves controlling said connections and seating against pressure in the working-cylinders.

809,171. Steering Device. Alexander T. Brown, Syracuse, N. Y., assignor to Brown-Lipe Gear Companv, Syracuse, N. Y., a co-partnership. Filed May 11, 1904. Serial No. 207,463.

Claim.—1. A steering device for vehicles comprising a driving member having internal substantially helical teeth, and a driven member arrangcd eccentrically relatively to the driving member and provided with teeth engaging the internal teeth at one side of the driving member and separated from said internal teeth at the diametrically opposite side of the driving member, substantially as and for the purpose specified.

809,185. Explosive-Engine. John F. Johnson, Chester, Pa. Filed October 19, 1904. Serial No. 229,133.

Claim.—1. In an engine, the combination with a cylinder, of a reciprocatory piston mounted thereon, a tubular extension carried by the piston and reciprocating therewith, said extension having a port, means for introducing motive-fluid-supply charges into the extension, a cut-off located within the extension and arranged to close the port thereof, and means for holding the cut-off against reciprocation.

809,205. Vehicle-Wheel. George D. Munsing, New York, N. Y. Filed March 20, 1905. Serial No. 251,103.

Claim.—1. In a vehicle-wheel, an inner rim, a hub, spring-spokes having their outer ends bent, a two-part clamp to adjustablv hold the hub end of each spoke and having bearing in the hub. and a channel-shaped over which the outer bent ends of said spokes take and around which said bent ends are capable of rotation, substantially as and for the purpose set forth.

809,211. Starting Means for Gas or Similar Engines. Francis L. Orr, Thurman, Iowa, assignor of one-half to Mark Morrow, Percival, Iowa. Filed February 21. 1905. Serial No. 246,753.

Claim.—1. An explosive-engine starter, employing an air-storage tank, a carbureter, an air-passage way leading from the storage-tank, through the carbureter and into the combustion chamber of the engine, means for re-storing the air-tank, means operating to arrest action of the storing means by pressure in the storage-tank, a spark-plug with battery and suitable electric circuit, ,for ignition of the explosive mixture in the engine combustion-chamber, a communicator device driven by the engine, a valve in the air-passage way leading from the storage-tank, a solenoid or similar device having electric supply and a cut-out, adapted for operating the said valve, brushes adapted for adjustment into circuit-closing contact with the commutator bv operation of the solenoid, a normally open circuit-closer adapted for closure through operation of the solenoid, the spark-coil and battery being in electrical circuit with the commutator-brushes. the engine spark-plug, and the poles of the normally open circuit-closer, substantially as described.

809,235. Induction-Coil Vibrator. Richard Varley, Englewood, N. J., sasignor to The Autocoil Sompany, a Corporation of New Jersey. Filed February 25, 1905. Serial No. 247,215.

Claim.—1. An induction-coil comprising a vibratile element fixed at one end and carrying an armature at the other, in combination with a tension screw adapted to positively increase the tension of said element when working outward.

809,262. Contact Device for Induction Apparatus. Ralph O. Hood, Danvers, Mass., assignor of one-half to Warren D. King, Peabody, Mass. Filed April 11, 1905. Serial No. 254,921.

Claim.—1. In a contact device for induction apparatus, the combination of a casing, a flexible closure therefor forming therewith a substantially air-tight chamber and contact-points, one of which passes through the said flexible closure.

809,268. Sparking Ignition System. Leon J. Le Pontois, New Rochelle, N. Y., assignot to Poly-Phase Ignition System Company, a Corporation of New York. Filed November 17, 1904. Serial No. 233,165.

Claim.—1. A sparking ignition system comprising an alternating-current generator of the inductor type, said generator consisting of a stator having a field-magnet in the form of a permanently magnetized ring wound from a continuous steel ribbon, symmetrically-located polar projections secured to said ring, coils wound on said polar projections, an inductor mounted on a revoluble shaft whose axis is coincident with the axis of said stator and constituting a rotor, a circuit-breaker rigidly secured to said stator, a cam mounted on the rotor-shaft and adapted to actuate said breaker at the period of maximum current generation, a transformer, and means for shifting said stator and breaker relative to said rotor and cam respectively so as to modify at will the time of sparking.

Lubricating the Shaft Drive.

A point in connection with the lubrication of the cardan joints of shaft driven machines is that although there is little or no danger of their receiving injury from dust or mud while the machine is running, owing to the effect of the centrifugal force of the rotating parts, when it is brought to rest, if there is a coating of either on the outside of the joints, it is very likely to work into the bearings. Consequently, when such parts are not properly protected by leather or metallic covers, they should be washed off with care as soon as the car is brought in from the road, and then lubricated plentifully.

In Case of Radiator Troubles.

In nearly every case of failure on the part of a radiator, the cause may be directly attributed to the vibration of the machine, and the distortion of the frame when running over rough roads. As a matter of precaution, it is well to place under the supporting arms bits of sheet rubber which will serve to absorb the majority of the strains. Pieces cut from a discarded inner tube will be found to answer very well for this purpose.

To Preserve the Accumulator.

To preserve accumulators during the winter, a motorist advises that if the car be not used during the winter the ignition cells will keep in good condition if all the electrolyte and dilute sulphuric acid is emptied, and preferably distilled water substituted. A disused battery put by without taking this precaution is apt to become badly sulphated, and is practically incurable.

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15 cents per line of seven words, cash with order. In capitals. 25 cents per line.

A TEN PASSENGER wagonette; sample car, 1905-1906 model steam; price and description on application. THOMPSON AUTO CO., Olneyville Sq., Providence, R. I.

WANTED—Trained men as instructors in progressive automobile school. Fitness proved by examination. Address, INSTRUCTOR, care of Motor World, Box 649, N. Y.

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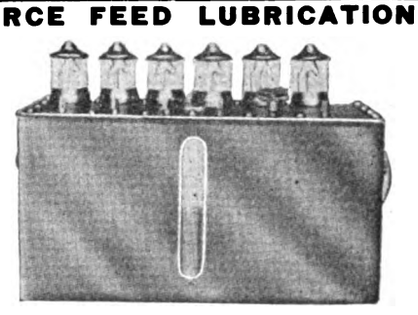
MUST be sold at oncc for the account of purchasers of 1905 Royal Tourists: 1904 Peerless, fine condition, canopy top, gas tank, price $1,500; 1905 Royal Tourist, fine order; 1905 Pope-Toledo, type 8, perfect condition, canopy top. Ohio Sales Agency, THE ROYAL MOTOR CAR CO., 330 Euclid Ave., Cleveland. O.

FOR SALE—One Model D. Cadillac Automobile in first class condition full lamp equipment and cape top. Also one Model F. Cadillac, in first class condition. THE COOK & STODDARD CO., 22nd and P St., N, W. Washington, D. C.

FOR SALE—Very cheap, Searchmont four cylinder; Ford two cylinder; Winton two cylinder; Rambler two cylinder; improved Rambler E, one cylinder; Orient Buckboard; mostly 1905 cars; prices and descriptions extremely interesting. A card will bring the information. E. S. YOUSE, Reading, Pa.

AUTOMOBILE users, drivers, repairmen, chauffeurs and others wanted all over the country; 50,000 machines built this year in United States, affording great opportunities for men trained in this coming business; six cents a day will qualify you for good wages in this field; in which the demand is such that ability counts ahead of pull and length of service. For full particulars, address THE CORRESPONDENCE SCHOOL OF AUTOMOBILE ENGINEERING, Suite 1357, Flatiron Building, New York City.

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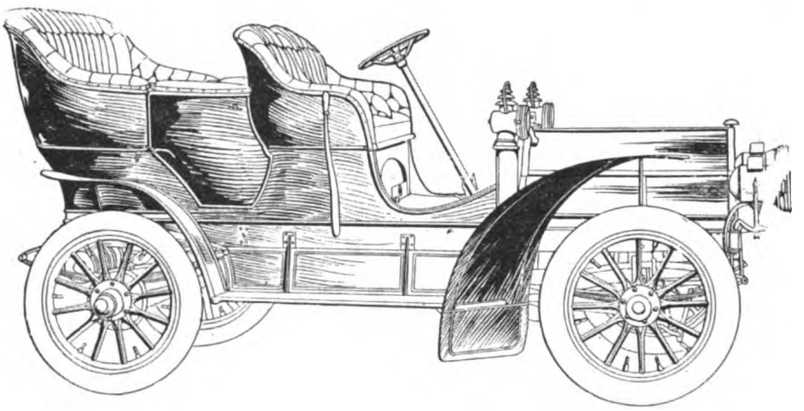
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Solid cast aluminum body on one frame, power plant on another, each suspended on THREE PIVOTAL POINTS.

This eliminates the binding and twisting strains inevitable in rigid suspension of all other cars.

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For the dashboard of your automobile. Indicates the speed with positive accuracy. Registers the Season mileage traveled in miles and tenths to 10,000 miles. Registers the Trip mileage in miles and tenths to 100 miles. The mile figures are black; fractional miles, red. The Trip register has a stop-watch instantaneous resetting stem. Speed is indicated and mileage cumulatively recorded whether the car go forward or backward.

THE DASH BRACKET is adjustable to permit the instrument being set at any desired angle.

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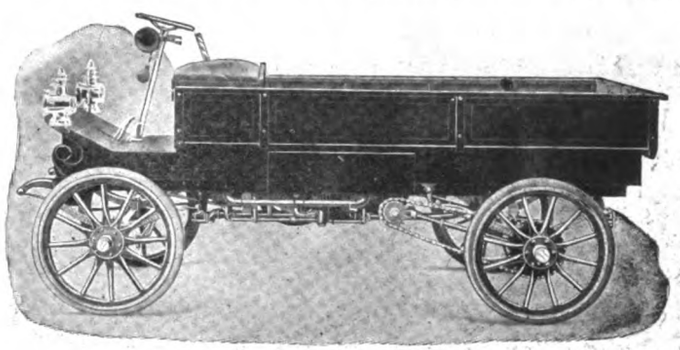
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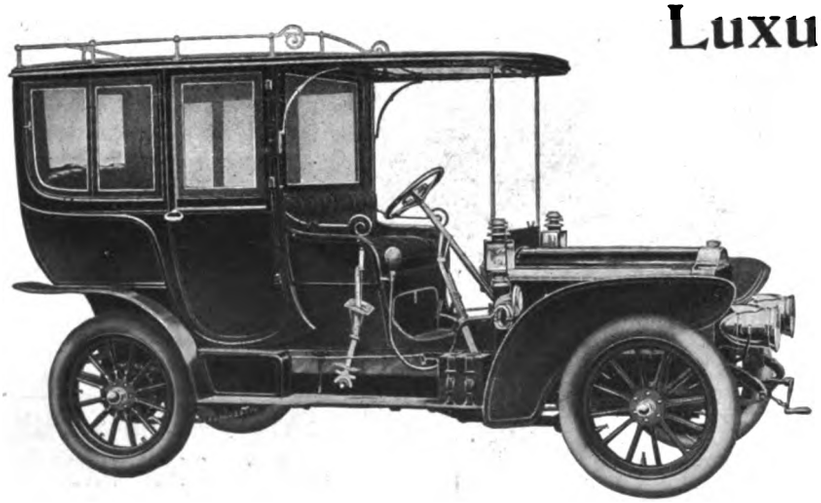
Again, you can throttle the Elmore engine on the high speed down to two miles an hour. Again, the Elmore will take a 16 per cent. grade on the high speed with approximately as much ease as it travels on the level road.

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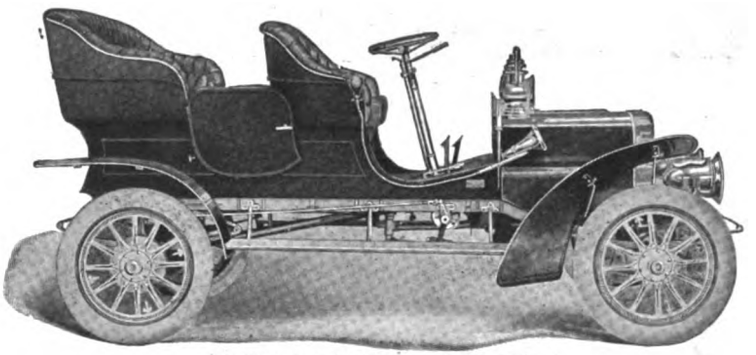
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At Madison Square Garden, Jan. 13th to 20th. Our 1906 line will be the sensation of the show—the most distinctive and interesting cars on the floor. No doubt about it. Watch.

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Sturdy Northern Runabout, 7 h. p. single cylinder, with oil lamp equipment.....	$650
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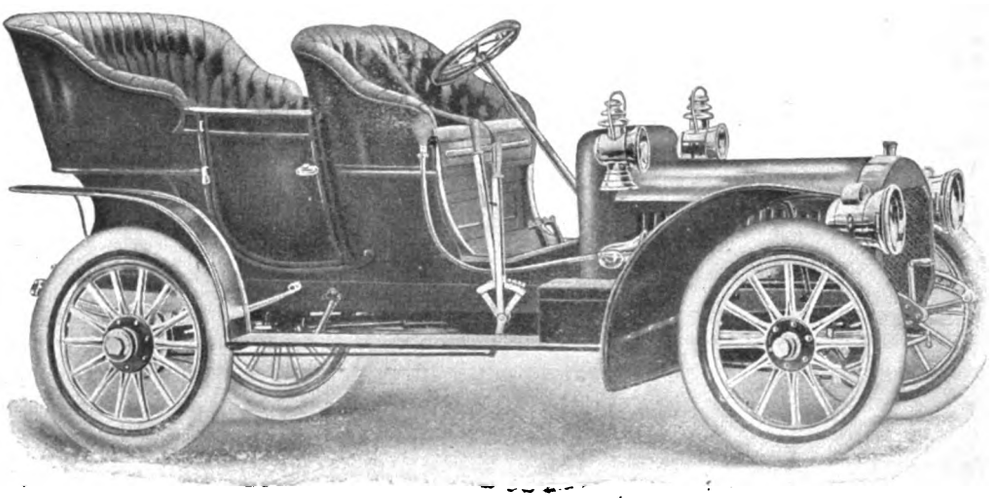
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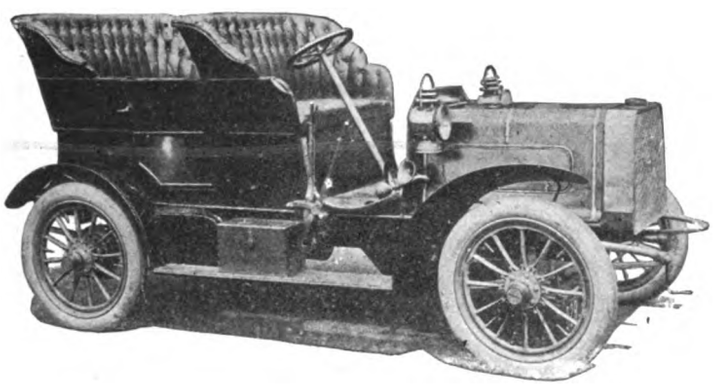
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Read the following specifications and then think it over:

30-35 H. P., 4 cylinder, balanced motor, high tension ignition, using one coil with distributing commutator.
Forced ventilation by fan.
Mechanically operated valves.
Inlet valves interchangeable with exhaust valves.
Control on steering wheel to gas and ignition, no motion transmitted to these levers by movement of steering wheel.
Gear, three speeds and reverse, actuated by single lever.
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4-cylinder 30-35 H. P.
Imported Simms-Bosch Magneto—automatic make and break spark.
Direct drive. Nickel steel I-beam front axle.
34x4-inch wheels. Ball bearings. Wheel base, 104 inches.
Simplest control, 5 to 55 miles on high gear.
Absolutely noiseless.
Body option Victoria or Tulip, as illustrated.

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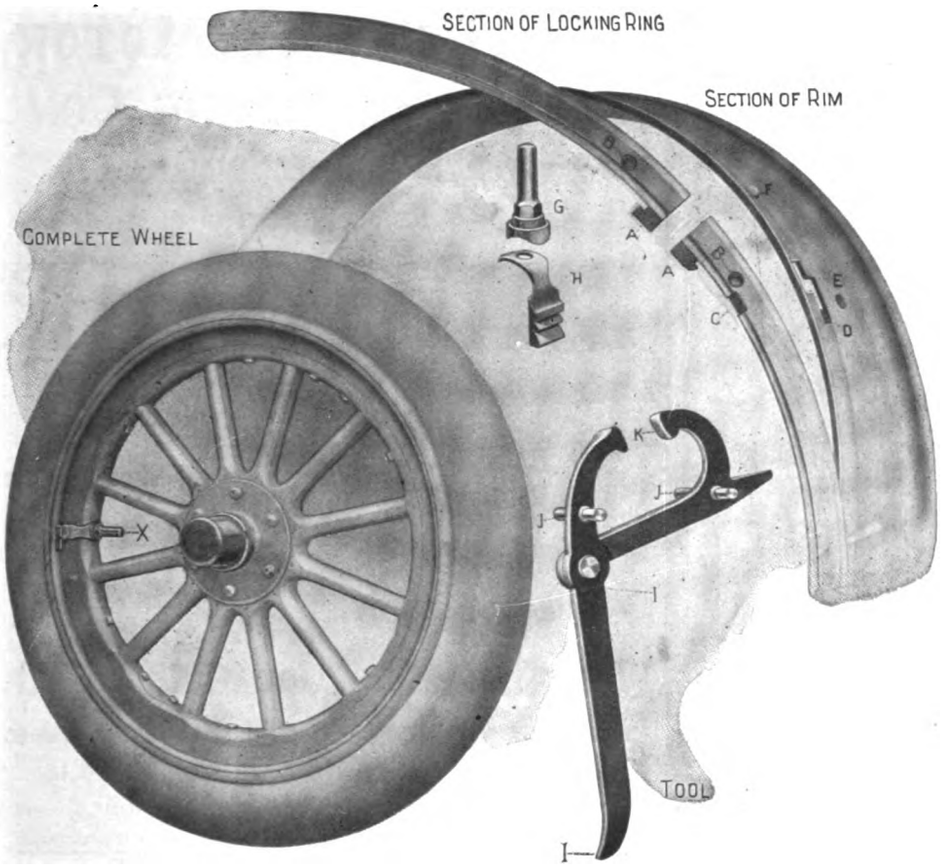
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Tells exactly what is accomplished by means of the

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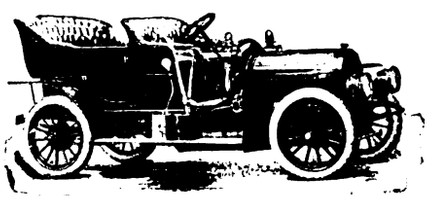
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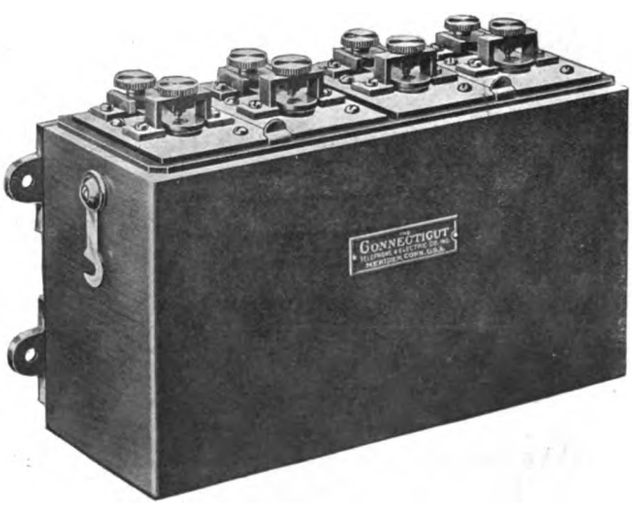
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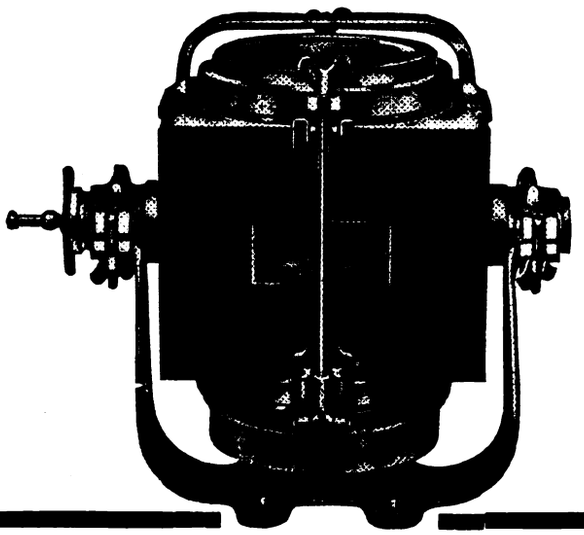
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for lighting motor-cars and boats, is built on an entirely new principle and makes gas only as needed—no danger of explosion.

Turn it on and it is ready to light instantly
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Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

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"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

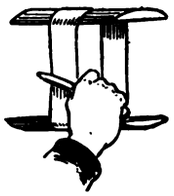
CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.

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Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What tire shall I get *next* time?"

For a rim-cut tire is pretty near its finish.


Fig. 1

And the chances are ten to one that if you are forced to ride around the block on a deflated ordinary tire with ordinary rims your tire will be rim cut before you get there. Because ordinary rims are just like a dull jack-knife. Now if you wished to cut a strap with that dull knife, and the strap was held like Fig. 1 you couldn't do it, because your strength would not be great enough.


Fig. 2


Fig. 3

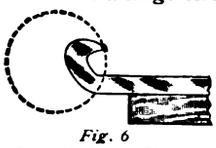

Fig. 4

But if you take the strap like Fig. 2, with a little sawing you can cut it. That's exactly the way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim to cut the tire. But just as soon as it gets partly deflated or flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.

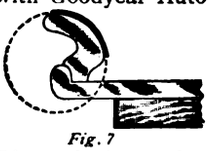


Fig. 5

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.


Fig. 6

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.

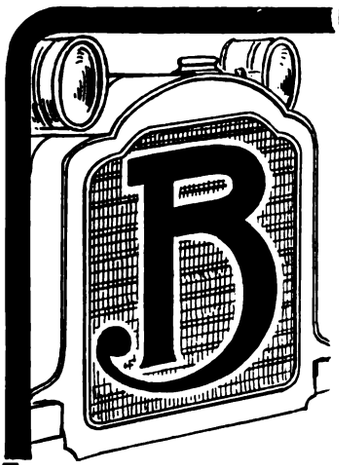

Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims *absolutely flat* for **25 miles** on rough roads without serious injury to the tire. We have the evidence if you would like to see it.

This is only one reason why wise riders are specifying Gooodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manufacturers, Dealers and Riders seeking relief from tire troubles.

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Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 596 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.



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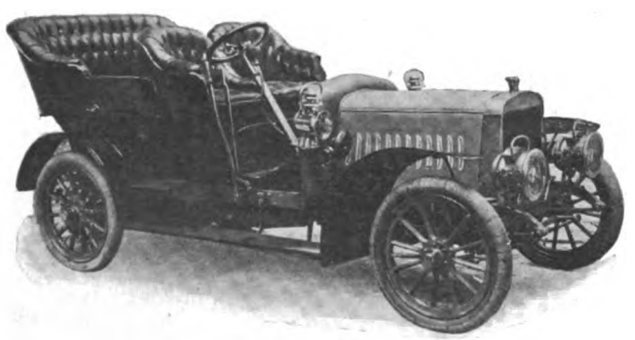
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Specifications, Type XV

Price	$3500. Complete with two side Oil Lights, two Acetylene Head Lights and Generator, Tail Light and Horn.
Type	Touring Car.
Seating Capacity	7 persons.
Weight	2600 lbs.
Wheel Base	114 inches.
Tread	56 inches.
Clearance	10 inches.
Body	Double Side Entrance Tonneau, divided Front Seats, made of best seasoned Ash, Poplar and Basswood.
Seats	Soft Edged, Spring Cushioned Seats and Backs, width, front, 19 in., depth, 18 in., width, rear, 52 in., depth, 18 in.
Leather	Best Quality, Hand Buffed, Pebble Grained, French Finished.
Frame	Cold Rolled Nickel Steel, 180,000 lbs. tensile strength.
Axles	Front Nickel Steel, drop forged "I" Beam Spring Seats integral with Axle; rear 1½ in. square, Nickel Steel forged.
Engine	40 H. P. Vertical, 4 cylinder, mechanical valves.
Clutch	Multiple Disc, running in oil, self-contained, no end thrust on bearings.
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Speeds	4 speeds forward and one reverse on one lever.
Gears	Chrome Nickel Steel, oil tempered, 212,000 lbs. tensile strength.
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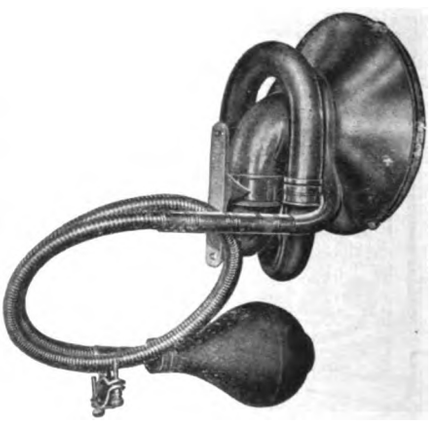
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you to the show? If it is fun, you will find us very abstemious, Puritanical and stupid. If it's business we have some new things which mean rapid sales and good, long profits to you if you are a dealer. We shall show them to you and tell you the prices, at our space in Madison Square Garden. It will pay to see what we have.

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IMPORTER

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And do not substitute or offer SOMETHING JUST AS GOOD.

"TRY MILLER"

This expression has now developed into a TRADE TERM. The public, which in the past has experienced difficulty in obtaining automobile supplies, should give us a trial, by mail, or a personal visit.

We are rapidly developing our Automobile Supply Business so that, by constantly being on the lookout for novelties and supplies, we are occupying that position in the Automobile World, that we have held for so long in the Cycling World.

BRANCH HOUSES are being opened so that we may keep pace with the growth of the pastime, and the public may depend upon obtaining

EVERYTHING NEW GOOD MODERATE IN PRICE

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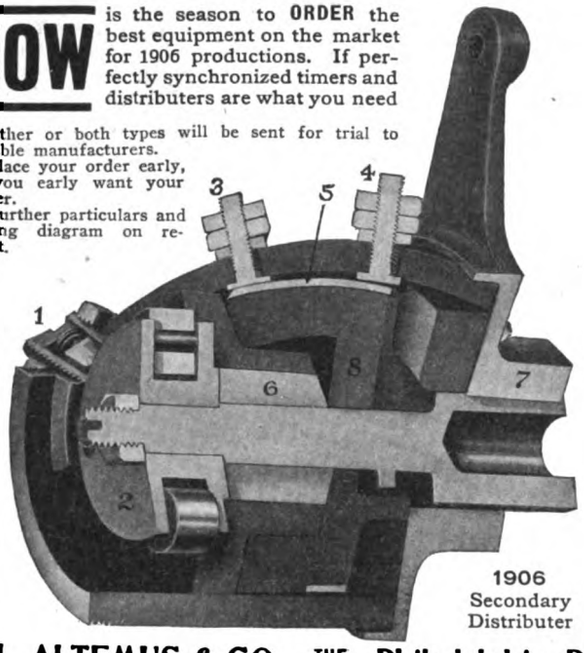
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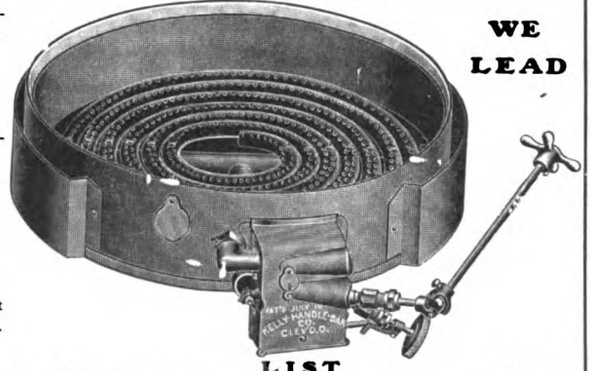
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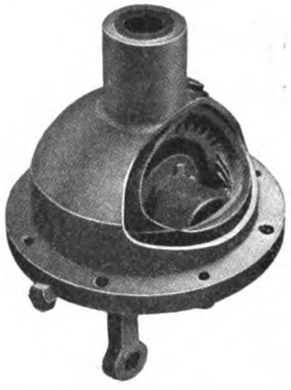
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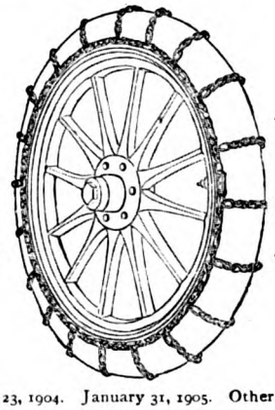
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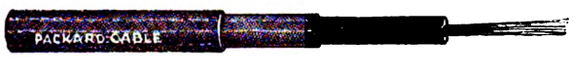
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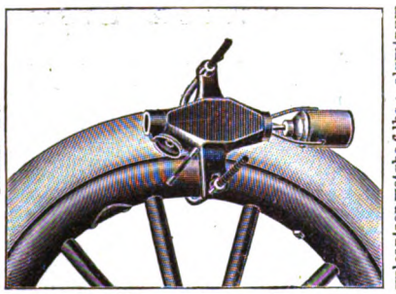
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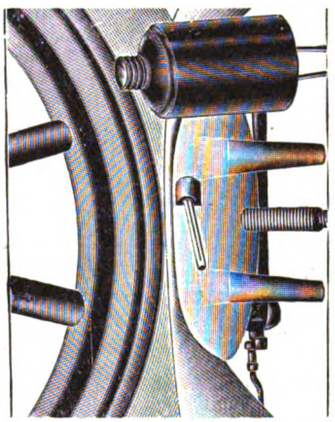
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Iron vulcanizer weighs 6 lbs.; aluminum weighs 4 lbs., boxed.
Will vulcanize a patch 2½ by 3½ inches on any size tire from 2½ to 5 inches.

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The "Pig" vulcanizers are made of aluminum only, and weigh from 4 to 7 pounds boxed, according to size.
Two cans cement and 6 inches square of Para free with each outfit.
In ordering, be particular to give the size of your tires.
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Remove the Largest Tires in 3 Min. Time

SIMPLEST SAFEST SUREST

Simplest, because there is nothing to get out of order; **Safest,** because there are no sharp points or edges to cut the tire; **Surest,** because no matter what the size of the tire or the inexperience of the operator the tire can be removed in three minutes.

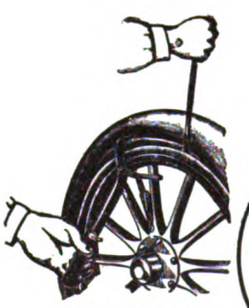
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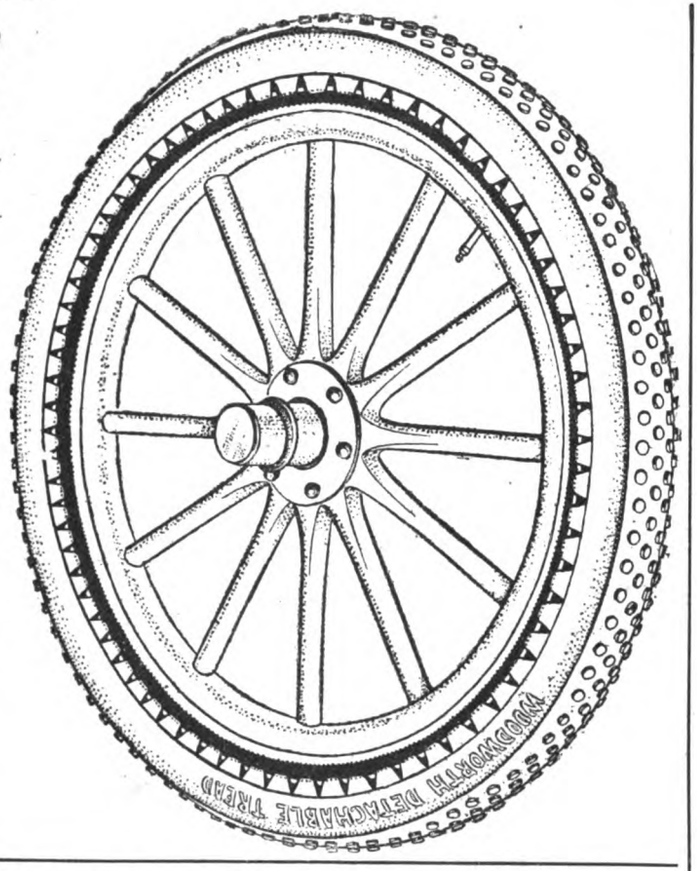
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FOR 1906

Is perfect in every detail. Our new construction making a partially flat tread, has the effect of increasing the wearing surface, and making the studded strip maintain its position exactly on the middle of the tire, even when the tire is flat. Our new wire side-ropes can be very quickly and easily adjusted, making it possible to apply the tread in less than 15 minutes, and with very little effort. The tread prevents punctures, skidding and wear. Suitable for any make of pneumatic tire, old, or new. Does not rot the fabric like a vulcanized tread. Adds to the appearance of the machine.

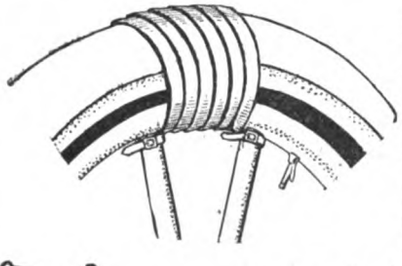
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26 x 2	$8.00 each
26 x 2½	10.00 "
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30 x 3½	15.00 "
30 x 4	16.00 "
32 x 2½	14.00 "
32 x 3	15.00 "
32 x 3½	16.00 "
32 x 4	18.00 "
34 x 2½	15.00 "
34 x 3	16.00 "
34 x 3½	18.00 "
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DOES for the automobile tire what tape does for the bicycle tire. ¶ Made of special chrome leather absolutely unaffected by water. ¶ Is applied by buckling one end to a spoke, winding tightly around the partly inflated tire and buckling the other end. ¶ Will enable a person to run a hundred miles with a bursted, rim-worn or badly cut tire-shoe. ¶ Makes it safe to take long trips without an extra casing.



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Prices, $1.00 to $1.75



GILBERT TIRE CASE

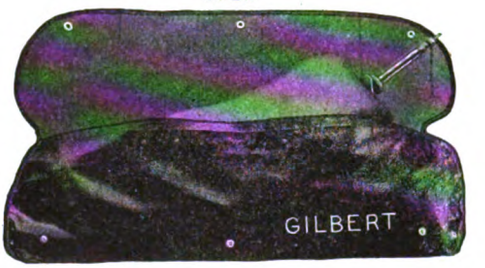
PRICES

Enamel Duck, - - $4.00
Fabric Leather - - 5.00

CLOSED



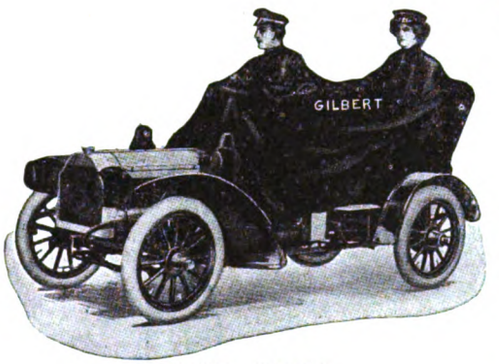
OPEN



INNER TUBE CASE

Price, $1.50





STORM APRONS

Runabout Size, - - - - - $10.00
Tonneau, " - - - $14.00 and $16.00



SLEEVE PROTECTORS

Per Pair, $1.50





TOOL ROLLS

PRICES

Without Tools, $2.00
With Tools, - 6.50



RAW HIDE BANDS

PRICES

Plain—all sizes, - - - $1.25
With Non-Skid Rivets, - - - 1.50



STEERING KNUCKLE BOOTS

PRICES

Enamel Duck - - - - $0.50
Leather - - - - 75c. to 1.00

JOBBER

MANUFACTURER

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97-99-101 READE ST., NEW YORK, N. Y., U. S. A.

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER IMPORTER

NOTHING

produces a more brilliant lustre, gives better satisfaction, works easier and faster, and wastes less than

"GLOBE" METAL POLISH



IT WILL NOT

Eat Away or Wear Off the Metal

It is an Absolutely Pure Polish

SOLD BY

CHAS. E. MILLER

Miller's "Diamond" Vulcanizing Substitute



Tourist Kit. For tourists we furnish a kit packed in a wooden box with sliding top, ¼ pint each Cement and Acid Cure, a piece of emery cloth and 2 brushes for applying cement and acid.

Price, Each, $1 20

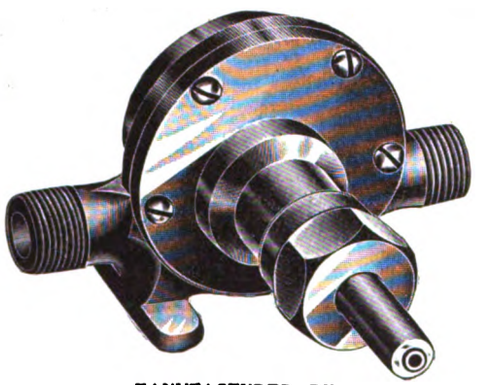
For Shop Use. We furnish this substitute in boxes containing one pint each or one quart each, cement and acid solution.

Price, $1.50 and $2.75

MILLER'S Anti-Freeze Compound

Ten pounds of this compound added to two gallons of water will not freeze at 15 degrees below zero. Price of 10-pound can, $1.00.





THE "ADVANCE"

SLOW SPEED

Rotary Circulating Pump

NOT "BETTER THAN EVER"

BUT "BETTER THAN ANY"

Made Right First

Made Same Way Now

All Bronze and Brass

TWO SIZES { ¾ INCH PIPE / ½ INCH PIPE

MANUFACTURED BY

BOCK & SEVERIN

310 W. Chicago Ave. CHICAGO, ILL.

Efficiency of these pumps is illustrated by the fact that our ½-inch size is successfully cooling a number of 4 cylinder 4½" x 5" motors running at ½ motor revolutions.

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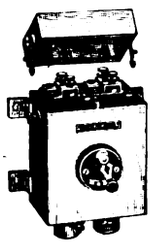
IMPORTER

PITTSFIELD IGNITION SPECIALTIES

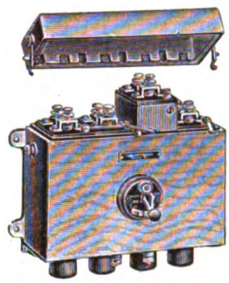
For 1906



Single Cylinder Dash Coil



Two Cylinder Dash Coil



Four Cylinder Dash Coil

Pittsfield Spark Coils

are as nearly perfect as it is possible to make them. The insulation is of the best and we guarantee that it cannot be punctured or ruptured. It has an extremely fast vibrator, and all adjustments are by lock nuts. Made for one, two, three four and six cylinders, dash type; and one, two, three and four cylinder box type. Smallest and most efficient American Coil made.

The 1906 Jewel Spark Plug

is of the same excellency of manufacture that has made this plug so popular throughout the country, the difference being that it is much shorter, the core being ground on a taper into the shell, which makes it easy to remove and clean, and it is also made with a novel connection which does away with the binding nut and also obviates the trouble of twisting the core by a person using a wrench or plyers for fastening the nut. The advantage of a plug of this kind can readily be seen. We are daily receiving large orders for them.

The 1906 Pittsfield Timer and Switch are now ready

For further information address

PITTSFIELD SPARK COIL COMPANY

Pittsfield, Mass.

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IMPORTER

SCOTT'S MUFFLER

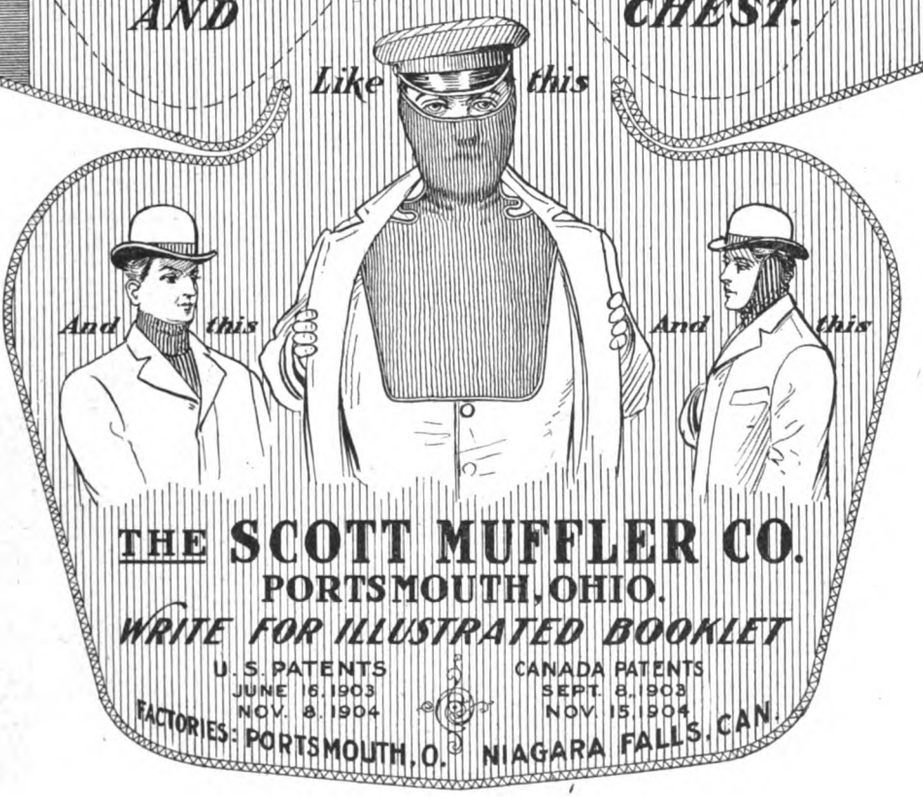
MAKES ZERO NECK EAR FACE & CHEST WEATHER PLEASANT
FOR LADIES, MEN, BOYS, GIRLS AND CHILDREN.

Dotted lines show how Ear Tabs fold into Pocket formed by lining of Muffler.

ALL IN ONE PIECE—FASTENS AROUND THE NECK.

A COMPLETE PROTECTION FOR
THE FACE, EARS, NECK
AND CHEST.

Can be worn three different ways.



THE SCOTT MUFFLER CO.
PORTSMOUTH, OHIO.
WRITE FOR ILLUSTRATED BOOKLET

U. S. PATENTS
JUNE 16, 1903
NOV. 8, 1904

CANADA PATENTS
SEPT. 8, 1903
NOV. 15, 1904

FACTORIES: PORTSMOUTH, O. NIAGARA FALLS, CAN.

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Rands Manufacturing Company

MACOMB AND BEAUBIAN STREETS : : : : : DETROIT, MICHIGAN

We manufacture **TOPS** for any make of car

Factory Capacity 5,000 Tops per annum

Cape and Extension Tops clear body when down. Storm Fronts. Heavy Re-inforced Sockets.

Our Patented Extension Tops, Semi Limousine and Canopy Tops with concealed body irons are high class.

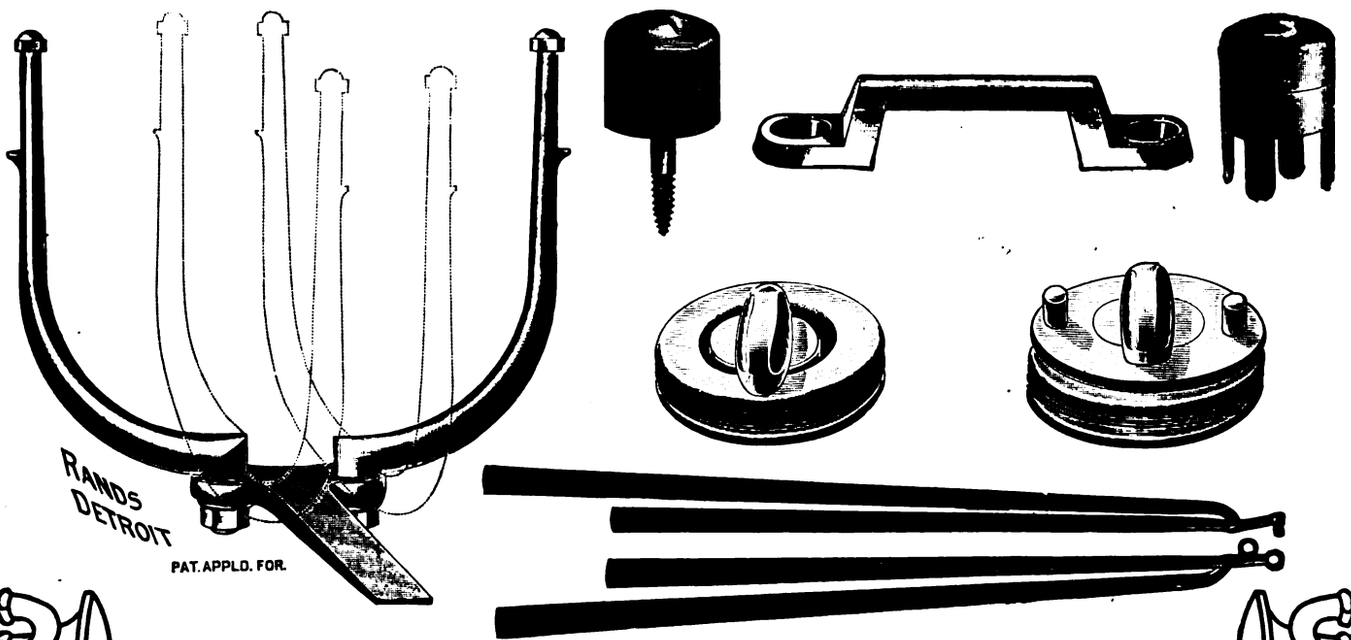
Extension Top with either Slat Iron or Socket Construction. Also Joints if desired.

WM. C. RANDS

Manufacturer and Jobber of

Automobile Equipment, Top Materials, Bowsockets, Supplies, Adjustable Lamp Brackets, Concealed Body Irons, Etc.

51 to 55 Macomb Street *DETROIT, MICHIGAN*



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EXPORTER IMPORTER



Never Miss
PLUG
For 1906

Patent Applied for

Imported Porcelain
Can't Short Circuit
Can't Soot Over
Greatest Air Space
Electrode and Cup Shaped Cap Made From One Piece Steel
All Jar Taken From Porcelain
Expansion Allowed For
Just Original Spark Plug Sense
NO TROUBLE WITH A NEVER MISS
Any Thread

FULLY GUARANTEED
$1.50

Charles E Miller, Eastern Agent.

***YOU HAVE TRIED THE REST NOW TRY THE BEST*—NEVER-MISS**

33 1/3 per cent. more of real Automobile and Motor Boat satisfaction if you will join the army of over 200,000 of satisfied motorists who use and swear by the Never-Miss Plugs, Coils, Chain Tools, Battery Connections, Terminals and Voltammeters.

PORCELAIN PLUGS, MICA PLUGS, LAVA PLUGS. } ANY SIZE, ANY CAR, THE RIGHT PLUG AT THE RIGHT PRICE. **$1.50**

Ignition troubles ended with Never-Miss. One-third faster, one-third farther, and besides you get back.

Just a Step Ahead in Quality And a Step Behind in Price

When a competitor gets out his little hammer he is our best advertiser. You know the game.

Every Knock a Boost.

Don't throw away those Batteries. Four out of five may be good. Find out with a Never-Miss Combination Voltammeter. Absolutely reliable and fool proof. Can't get out of order. No wheels or springs. Gives the voltages and amperes. Just right size for pocket. Complete, with a Russia leather case, $5.00. You can save the price of one the first 3 months.



Never-Miss Connections used by 90 per cent. of the manufacturers and jobbers in 1905. Poor connections cause endless trouble. Avoid by getting the non-trouble kind. Get the corrugated terminals, they do not cost any more but are 100 per cent. better. 50c. the doz.

NEVER-MISS
Handy Chain Repair Device



The above cut shows the biggest little device on the market. Chains repaired in 5 minutes. No soiled hands or temper. Your tool kit incomplete without one. Get one to-day, you may need it to-morrow. 75c.

NEVER-MISS SPARK PLUG CO., LANSING, MICH.

Witherbee Storage Battery Igniter



Over 12,000 Now in Use.

Present Capacity 1200 Batteries Per Week

"Every Battery Guaranteed Every Customer Satisfied."

Recognized as the Most Satisfactory Means of Ignition

This battery is now endorsed and used exclusively by 45 of the leading automobile and motor boat manufacturers.

Every battery guaranteed to give satistfaction or purchase money refunded.

Can you afford to consider anything else for your '06 equipment?

Write for descriptive pamphlet.

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MONEY makes the mare go. PETROLEUM makes the motor go

But the OIL that makes the car go best, is known as

LUBROLEINE

LUBROLEINE Non-Carbonizing Cylinder Oil for Gasolene Motors.

LUBROLEINE CYLINDER OIL
For Steam Motors





This oil is especially manufactured for lubricating the Cylinders of Gasoline Motors It has a high fire test, will not carbonize or gum, and is perfectly safe.

LUBROLEINE ENGINE OIL
For Bearings



Packed in 1, 5, 10 gal. cans, barrels and half bbls.

CLYMAX-SYNOVIA

Solidified Oil or Cup Grease

FOR AUTOMOBILES AND MOTOR BOATS



This high grade lubricant is a combination of the finest grades of mineral lubricating oils. It is impervious to heat, cold, water or steam. Will not gum, and contains no acid, alkali, or any ingredient injurious to finest metal surfaces.

It is not affected by climatic changes, and retains its consistency under all ordinary degrees of temperature.

CENTAUR GRAPHITE GREASE

For Automobiles and Motor Boats, Axles Bearings, Chains and Gears



This preparation is a perfect combination of the finest American graphite and a high grade lubricating grease. While it is of a pasty consistency, it is not affected by climatic changes. It is impervious to heat, cold, water or steam, will not gum, and contains no acid or any ingredient injurious to the finest metal surfaces.

Its anti-friction qualities are unexcelled.

Packed in 1, 2, 5, 10, 25, 50 lb. cans. barrels and half bbls.

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FISKE BROS. REFINING CO., 13 & 15 Old Slip, NEW YORK

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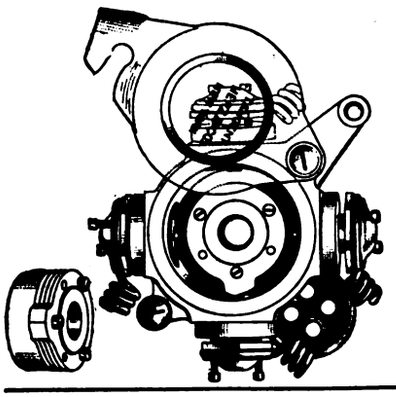
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HERZ-TIMER
BOUGIE MERCEDES
PUCK SWITCH
PATENT SAFETY SWITCH
HERZ DISTRIBUTOR
OSCILLUM REDIVIVUS
B. B. PUMP
COMPLETE IGNITION OUTFITS

HERZ & CO.

CIVIL ENGINEERS
MAKERS OF THE FINEST IGNITION MATERIAL
BERLIN. PARIS. 187 Elm Street LONDON. VIENNA
NEW YORK

GUENET-COILS
WHISTLE TANKS
CABLES & WIRES
ARMORED IGNITION CABLE
DETACHABLE CABLE TERMINALS
WIRE TERMINALS WITH GROOVE

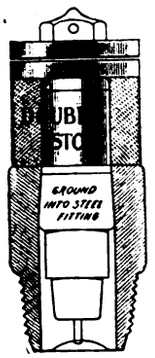


Herz Timer

One of 10 Models

The Best Circuit Breaker Made

We fit any Motor



Bougie Mercedes 1909

Absolutely Self-Cleaning

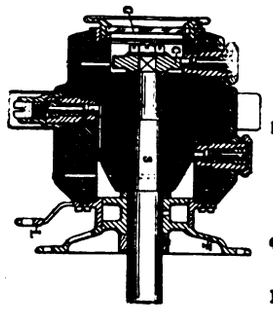
Here's testimony:

"Dec 11, '05.

"I have been using 2 of your plugs since November, *two years ago*. I should say seven days a week. . . .

"ARTHUR W. YALE,
"1525 Chestnut, Street
"Phila., Pa"

Price, $2.



Herz Distributor

for DASHBOARD

Scientifically and Mechanically Perfect

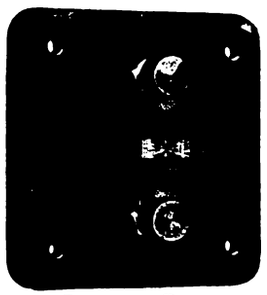
One Coil for all Cylinders

Price, $80



Puck

The Switch with all contacts under dust and Water-Proof Cover



DASHBOARD TYPE

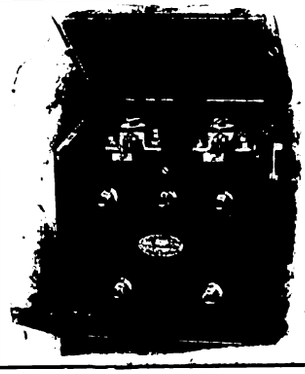
Oscillum Redivivus

A Spark Intensifier and Spark Indicator

It shows if Coil and Plugs are Working

Price, $1

Dashboard $1 50



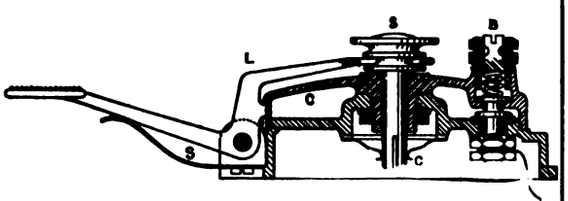
Guenet Coils

The Finest French make

Price

1 cyl. — 16
2 cyl. — 29
3 cyl. — 48
4 cyl. — 59

Reduction for J. G. Vibrator



Herz's Patent Foot Lever Switch

A LIFE SAVER PAR EXCELLENCE

Save your Tires and use the Meter as a Brake

Price, $5.00

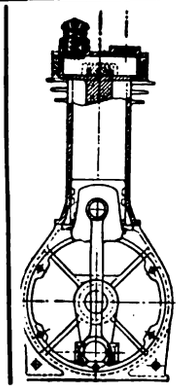


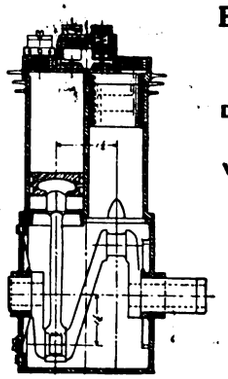
Herz Patent Groove Terminals

Assorted Boxes

60c.

with full instruction





B.B. Pump

A Power or Hand Air Pump

Double Piston Safety Valve

Height, 9 in.
Weight, 7 lbs.

Price, 25c.

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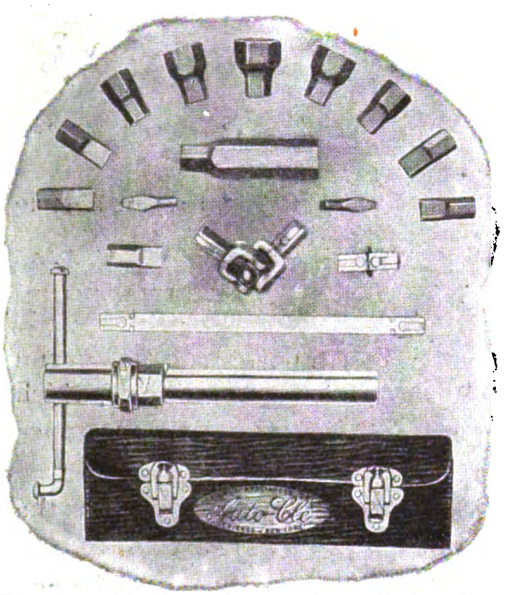
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

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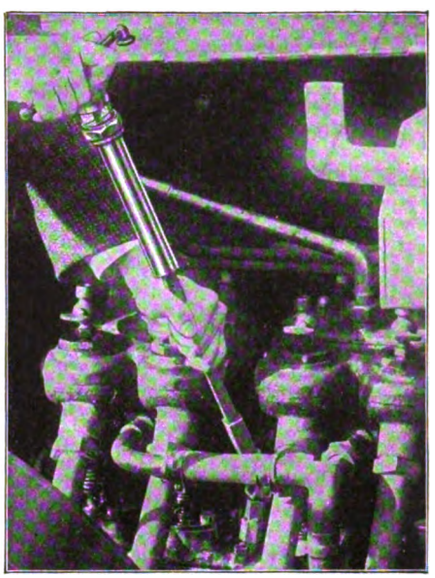
The Auto-Cle Wrench



The Auto-Cle Wrench comprises all the above parts, and they are all carried in the leather case shown above.

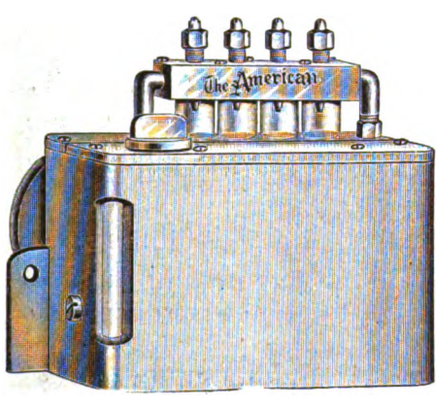
THE Auto-Cle Wrench fits any nut on any car. Saves time, trouble and expense.

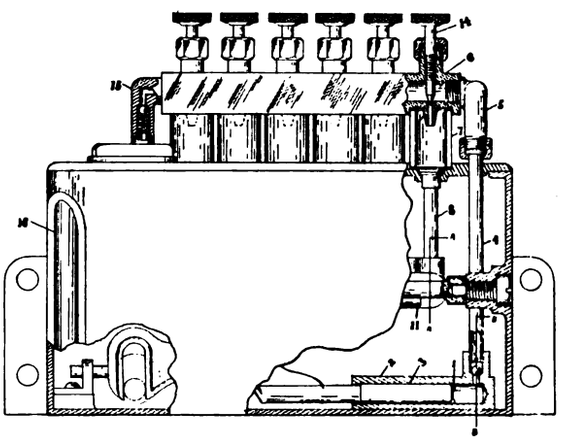
It is made in two sizes, the individual or regular set; the large or shop set.

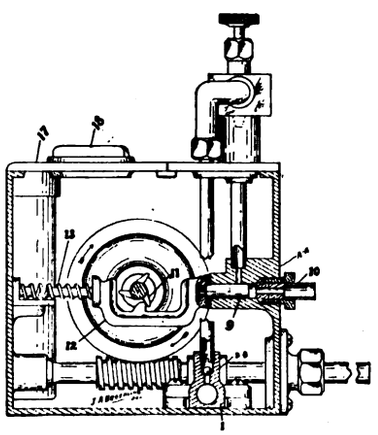


This illustration shows how the Auto-Cle can be used easily in any space and at any angle.

"COLUMBIA" A Positive Mechanical Automobile Lubricator







We show a Six-Feed Lubricator in illustration, but same can be constructed with any number of feeds desired; this Lubricator is also constructed with either Rotary or Ratchet Drive; the body is made of aluminum and highly polished; the Sight-Feed Bridge, Packing Nuts, Stems and elbows as well as Filler Plug are made of brass, highly polished and plated.

American Lubricator Co., 93-97 Catherine St., Detroit, Mich., U. S. A.

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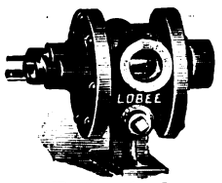
EXPORTER IMPORTER

Improve your circulation

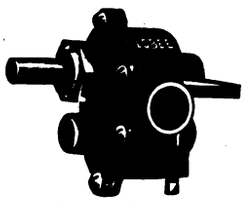
THE LOBEE

Circulating Pumps

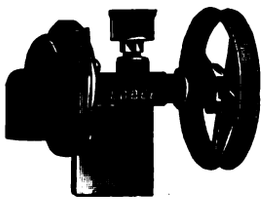
have a train of satisfied users everywhere—are the most universally endorsed of any Pumps made.



Patented



Gear Pump



Centrifugal Pump

If you want good circulation on your Automobile, Launch or Motor Boat, use

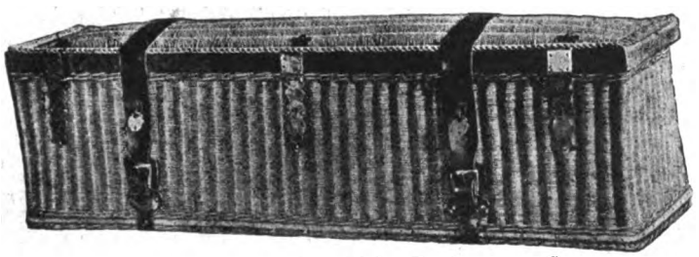
A LOBEE PUMP AND NOT AN IMITATION.

There are more LOBEE CIRCULATING PUMPS in use than all other makes combined which demonstrates their efficiency and durability

Write for Booklet—it's interesting

LOBEE PUMP & MACHINERY Co. (Inc.,) 140-152 Terrace, Buffalo, N. Y., U. S. A.

"BAY STATE" HAMPERS are the best for design, material and money



Rear Hamper for Side Entrance Cars

Are water and dustproof. We make several styles of Hampers for side entrance cars, which conform to the body and add to the appearance of the car.

Prompt Deliveries. Made by the

RATTAN NOVELTY CO.

Springfield, - - - Mass.

AUTO SAFETY DRIP PAN

MADE OF

Heavy Galvanized Steel with Heavy Rod in Rim



No. 1. Runabout, size 35 in. x 47 in......

No. 2. Touring Car, size, 35 in x 95 in......

Placed on floor under auto the pan catches all oil, grease and gasoline. **Easily cleaned.** Keeps floor bright and clean.

This pan has no **sharp edges** and when on floor, if auto is backed over edge it will not **injure the tires** nor injure the pan.

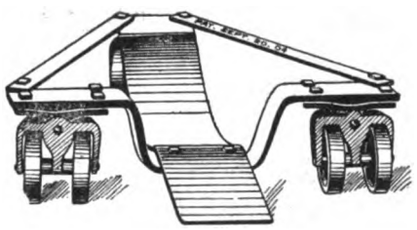
ALL PANS ARE SHIPPED SECURELY CRATED

PRICES ON APPLICATION

Dover Stamping & Mfg. Co.

385 Putnam Ave., Cambridge, Mass.

THE HANDY TRUCK



For moving automobiles in the crowded garage; in the private barn; in the work and paint shop; in the factory. One man can load and push the automobile sidewise to any desired position in one-half the time it takes to tell you about it. **Time is money—it saves time.**

In all lines of warehouse work this is the most useful **Patent Truck** on the market. Two men and **only** two **Handy Trucks** can load the largest automobile for shipment easily. Try them and you will never be without **The All-Steel Handy Trucks** Weight only twenty-three pounds each. The cheapest and best. **Once used always used.**

PRICE $15 PER PAIR

Chas. E. Miller, ***Selling Agent***

CHAS. E. MILLER,

JOBBER MANUFACTURER

97-99-101 READE ST., NEW YORK, N. Y., U. S. A.

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EXPORTER

THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

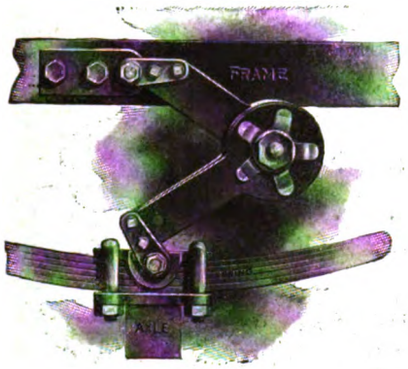
IMPORTER

IMPROVED

Truffault-Hartford

SHOCK ABSORBER

Insist that your car be equipped with the original Truffault-Hartford Shock Absorber



Increases the speed. Enables cars to proceed at highest speed over all obstructions. Doubles the life of tires. Prevents lost traction. Absolutely prevents breaking of springs. Makes cobble-stones and rough roads seem like asphalt.

New model absolutely self-adjusting.
Requires no attention after application.

Adopted by the Pierce Great Arrow, Locomobile, Matheson, Richard-Brasier, Peugeot.

DON'T BE MISLED BY DEVICES MADE ON PRINCIPLES WHICH WE HAVE DISCARDED

CARS UNDER 1,500 LBS , $40.00 (Four Suspensions)

CARS OVER 1,500 LBS., $60.00 (Four Suspensions)

HARTFORD SUSPENSION COMPANY

We are the Sole American Agents for the Celebrated Gobron Brille.
"The finest Automobile in the world."

E. V. Hartford, President.

67 Vestry Street, NEW YORK

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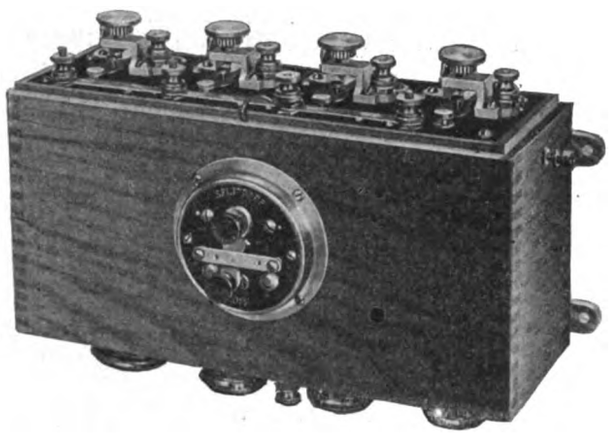
PERFECT IGNITION

IS ADMITTED BY THE KNOWING ONES TO BE POSSIBLE
ONLY WHEN

SPLITDORF IGNITION

IS USED.

See Our 1906 Types



1906. Four Cylinder Dash Coil,
WITHOUT COVER

All prominent Manufacturers use our apparatus if they have an eye to please their customers by minimizing the chances for trouble



1906. Four Cylinder Dash Coil.
WITH COVER

Don't Forget Our Exhibits at Both Shows

You will see something new in ignition and will leave a satisfied visitor.

C. F. SPLITDORF, 17-27 Vandewater Street,

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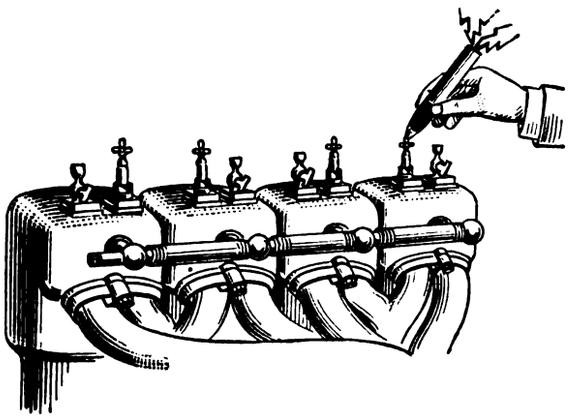
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

IMPORTER

SMITH'S SPARK TESTER AND SKIP FINDER





SMITH'S SPARK TESTER—(Full Size)

This little instrument is of great value to all motorists. By its use they are enabled to ascertain the nature and intensity of the spark which is occurring at the sparking point to spark plug, while the plug is in the cylinder and under compression, thereby doing away with the necessity for removing the spark plug from the cylinder and testing same and trying another plug to see if any trouble they may have is due to a fouled or imperfect spark plug.

Price $2.00

MANUFACTURED BY

DUCK BRAKE COMPANY

335 Broadway, N. Y.

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER IMPORTER

The CELEBRATED BRAMPTON CHAINS Made from Self-Hardening Steel



SCIENTIFIC AMERICAN
ESTABLISHED 1845.
INCORPORATED 1906.
MUNN & CO.
361 Broadway, New York.
CABLE ADDRESS: ETNAN NEW YORK.
PATENTS, TRADE MARKS, COPYRIGHTS, UNITED STATES PATENT OFFICE.

May 22, 1905.

Chas. E. Miller,
97 Reade St.,
New York City.

Dear Sir:-

I wish to express my appreciation of the Brampton chain, one of which I have recently given a severe test on a single cylinder touneau, the chain for which is small for the power it has to transmit. Last season I tried three kinds of the best domestic chains with the result, that each one was worn out at the end of about 500 miles. Owing to a quick-gripping clutch, I was constantly experiencing a broken chain.

As soon as I was able to procure a Brampton chain of the proper size, I equipped my machine with it. I recently made a 250 mile trip through the Berkshire region of Massachusetts, cutting directly across country from Northampton to Adams, over some very hilly and rough roads. During this trip the chain was submitted many times to terrific jerks when pulling the car out of mud holes and starting it on hills, these jerks being much greater than would ordinarily be experienced; owing to a fiercely-gripping clutch; throughout all this severe test the chain never failed me. At the end of the trip, and after running it altogether something over 500 miles, an examination showed only a slight wear on the inside of the rollers, causing a very little play of these on their bushings. The chain otherwise is as good as new. Best of all however, is the fact that I can now go motoring without the constant dread of a broken chain, the repair of which is the dirtiest of all jobs that the automobilist has to encounter.

Yours very truly,
Auto. Editor of the Scientific American.

Note Heavy Chamferred Side Plates. All Parts of this Chain Polished. Fits Sprockets Without Friction



TWO PAIRS OF CHAINS IN 75,000 MILES

BRAMPTON BROS., Ltd.

EALING, LONDON, February 13, 1905.

Dear Sirs:—We are using a Napier Car for conveying our "RISIN' SUN" METAL POLISH throughout ENGLAND, calling at the various stations en route to replenish the loads. We estimate the car has now covered a distance of 75,000 miles in about three years and five months, running daily with scarcely any delay, the only renewals worth mentioning were Brasses to Pistons, Chains only once (BRAMPTON'S), tyres frequently, CONNOLLY'S large solids have proved the most durable.

Yours faithfully, JOHN EDWARD SHARP & SON.

YOUR AMERICAN CAR

CAN BE AND WILL BE FITTED WITH THE CELEBRATED BRAMPTON CHAIN IF YOU ORDER IT THAT WAY, AND IT WON'T COST YOU OR THE MANUFACTURER ANY MORE THAN AN INFERIOR CHAIN. ALL STANDARD SIZES IN STOCK TO FIT AMERICAN AND FOREIGN CARS.

We are Sole United States Agents for this Line of Chains, and are ready to Quote Manufacturers Interesting Prices on American Standard Sizes. *Catalog Mailed on Request*

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CHAS. E. MILLER,

97-99-101 READE ST., NEW YORK, N. Y., U. S. A.

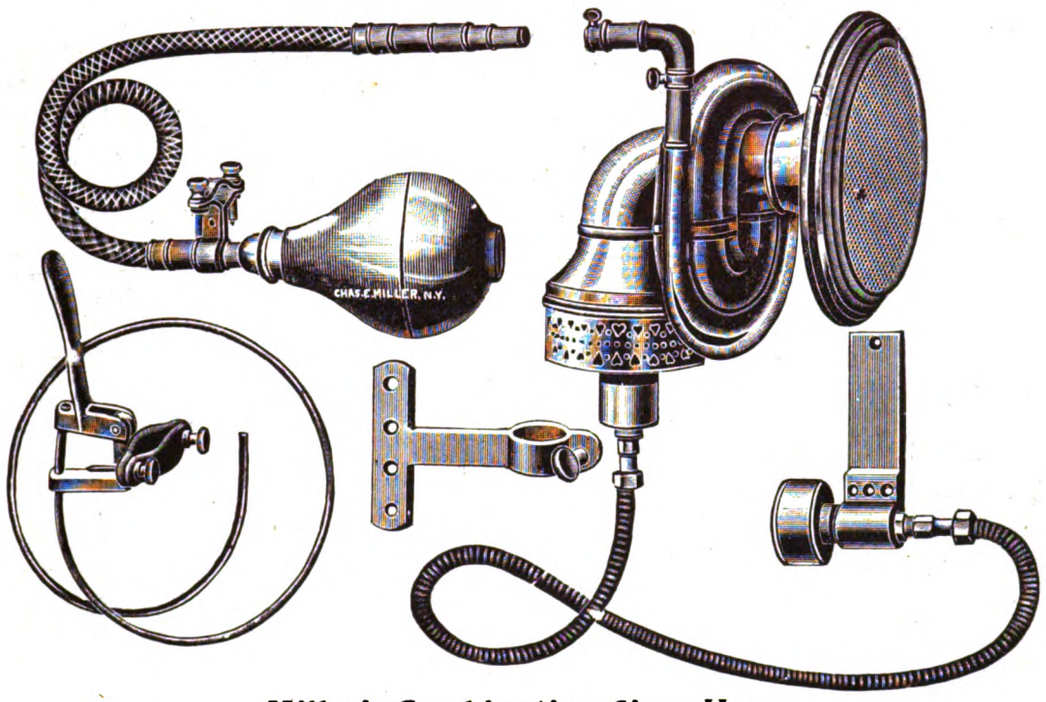
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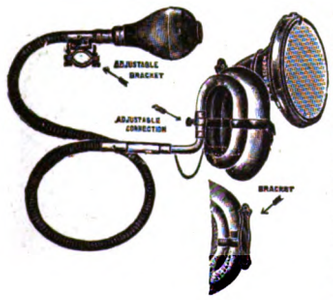
IMPORTER



Miller's Combination Siren Horn

This is a combination of the ordinary horn and the Siren Horn, and the only one of the kind on the market. Special Catalog mailed on request. Price of this combination horn is **$50.00.**

"La Bassoon" Horns



This is one of the latest ideas in a horn and is distinctly new. You will notice from the cut that this horn is made with an extra coil in the body of the horn similar to "La Tuba." This extra coil has the result of producing a very deep and musical tone. All our horns are spun from heavy brass and are highly polished. The illustration shows the adjustable bracket fitted to both horn and tube so that they may be attached to any kind of a car and in any position desired. The reeds and bulbs are guaranteed for one year.

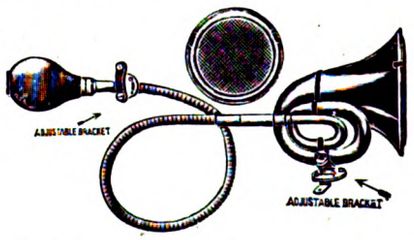
No. 15 L. B. Diameter of bell, 7 inches. Polished brass only. Complete with 40 inch flexible tube and screen, **$9.50.**

No. 14 L. B. Same as No. 15, except diameter of bell is 6½ inches. Price, complete, **$8.00.**

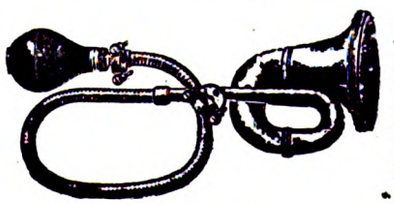
"La Tuba" Horn

This is another one of the latest (double bend) style of horns, similar to "La Bassoon." Fitted with adjustable brackets and produces a deep and lasting tone. Three sizes, complete with tube. Price each,

$7.00, $8.50, $9.50



No. 8, Our Leader



This horn is fitted with 40-inch tube, screen and adjustable brackets. Diameter of bell, 5¼ inches. Furnished in polished brass and nickel plated. Price, complete, as above, **$4.50.**

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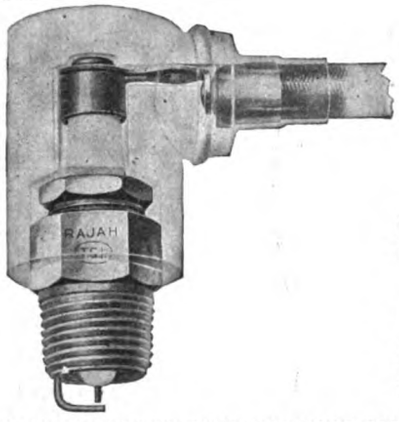
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER

IMPORTER



THE RAJAH SPARK PLUG AND HOOD FOR MARINE MOTORS



RAJAH S. P. TERMINAL

THE "RAJAH" Spark Plug

IS CREATING A SENSATION AMONG AUTOMOBILE OWNERS, MANUFACTURERS AND THE TRADE ON ACCOUNT OF ITS NOVEL FEATURES AND SIMPLE CONSTRUCTION

It embodies no freak idea or experiment; is easy to repair or replace porcelain, and is thoroughly mechanical throughout. The form of porcelain is such that the plug is as "Soot-Proof" as any plug can be. The Rajah Clip Terminal snaps into place, making instantaneous connection

NO CHANGE IN CONSTRUCTION AFTER THREE SUCCESSFUL SEASONS—AS NONE IS NECESSARY

IGNITION ABSOLUTELY SURE

RAJAH AUTO-SUPPLY CO., 140 Washington St., N. Y. City



ASSEMBLY OF RAJAH PLUG



RAJAH COIL TERMINAL



MILLER'S "DIAMOND" Vulcanizing Substitute

TOURIST KIT. For tourists we furnish a kit packed in a wooden box with sliding top, ¼ pint each Cement and Acid Cure, a piece of Emery Cloth and 2 brushes for applying Cement and acid.

Price, each $1.20

For Shop use. We furnish this substitute in boxes containing one pint each or one quart each, cement and acid solution. **Price, $1.50 and $2.75**



MILLER'S ANTI-FREEZE COMPOUND

Ten pounds of this compound added to two gallons of water will not freeze at 15 degrees below zero. **Price of 10-pound can, $1.00**

MILLER OIL GUN



Furnished in polished brass

No. 1, size of barrel, 1 x 8 inches. Price, each $0.75

No. 2, size of barrel, 1½ x 9 inches. Price, each 1.25

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EXPORTER IMPORTER

STA-RITE
"STAYS RIGHT THE LONGEST"



Improved No. 4A Porcelain Plug. $1.50

The BEST PROOF

in the world that "Sta-Rite" plugs stay right longer than any other plug is the fact that they are used exclusively by the largest and most critical manufacturers.

THE R. E. HARDY CO.,
225 West Broadway,
New York City

FORD MOTOR COMPANY
Automobile Manufacturers
DETROIT, MICHIGAN, Dec. 6, 1905.

GENTLEMEN:
We enclose herewith our order No. 9159 for 10,000 Sta-Rite plugs, same as we used last season.
Will say that we estimate our requirements for the season to be about 35,000 plugs and will forward further specifications a little later.

Very respectfully,
FORD MOTOR CO.
By J. H. O'BRIEN.

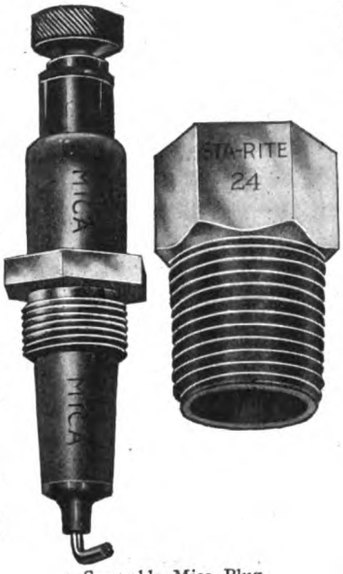
O. B. W.

OUR DETROIT BUSINESS ALONE WILL APPROXIMATE 70,000 PLUGS IN 1906

We have six types of ignition plugs, forty-seven sizes. We meet requirements of all manufacturers; and dealers find our line complete, satisfying and profitable. Send for new twenty-four page catalogue of plugs and coils.

See our Exhibit, Space No. 78 at Garden, No. 61 at Armory, No. 178 Coliseum, Chicago

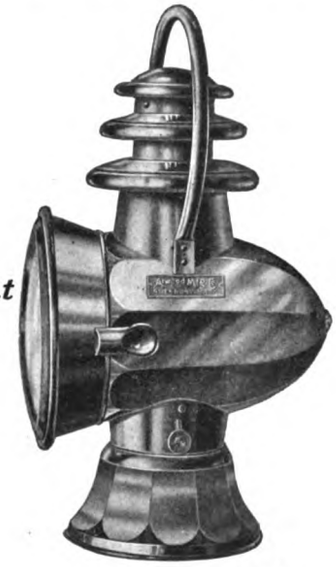
The R. E. HARDY CO., 225 W. Broadway, N. Y. City



Separable Mica Plug, ½", No. A24. $1.75.

ATWOOD MFG. CO., High Grade Lamps and Generators

No. 31 Oil Sidelight

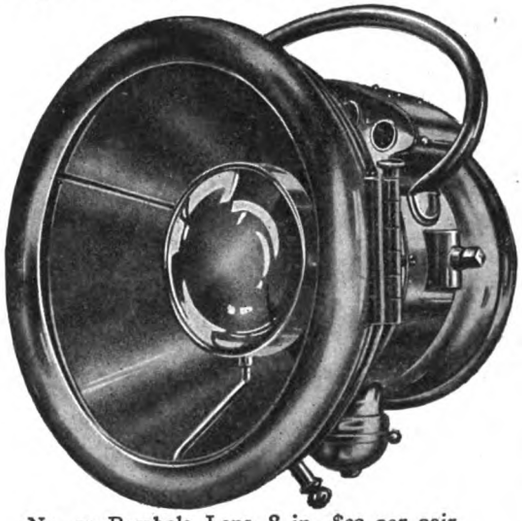


VERY LATEST.

No. 31. Oil, $12.00 per pair.

Height, exclusive of bail, 12½ in.
Diameter of glass, 6¼ in.
Length of body, 8 in.

Parabolens No. 33 Gas Headlight



No. 32 Parabola Lens, 8 in., $32 per pair.
No. 33 Parabola Lens, 9 in., $40 per pair.

Dimensions of No. 33.
Height, exclusive of bail, 10½ in.
Length, 10⅝ in.
Diameter of glass, 9 in.
Distance between lug centers, 7 in.
Diameter of lug hole, 15/32.

No. 32 size smaller than No. 33, made without Parabola Lens and with Bausch & Lomb Mangin Lens Mirrors at same price.

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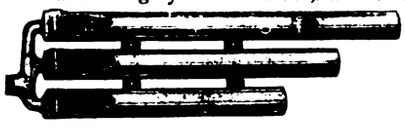
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GABRIEL HORNS



Blow from exhaust, enabling the driver to give entire attention to the car, eliminating constant watching which mars the pleasure of an auto ride.

Warn without frightening, having a clear, far-sounding musical blast. Are made of highly finished brass, in three sizes.



Nothing to get out of order and are easily attached to any car—steam or gasoline.

Have you heard our eight chime horn? An octave on which you can play any tune.

When purchasing be sure the horn has our trade mark.

The Gabriel Horn will be on exhibition at the New York Automobile Show, Madison Square Garden, and No. 20, 69th Regiment Armory.

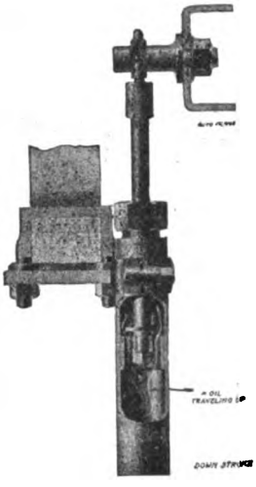
Write for Catalogue and Prices.

GABRIEL HORN MFG. CO. CLEVELAND

Don't be Shocked.

Only $30.00.

Foster Shock Absorbers



insure the Automobilists absolute comfort and safety—at the highest speed, on the rockiest road.

Our Shock Absorbers retard all motion going Up not going Up and Down. The Automobile has springs for the purpose of retarding the motion going down.

They are economical, simple, compact, substantial, weighing only 2 1-2 lbs-, adjustable in every direction and can be placed on any machine manufactured.

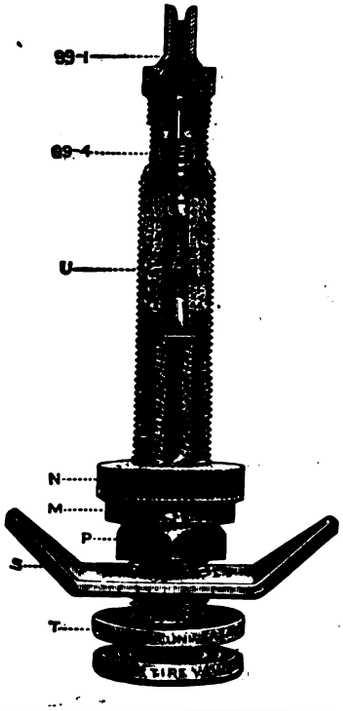
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GABRIEL HORN MANUFACTURING COMPANY, - - 981 Hamilton Street, Cleveland, O.

New York Representative, 148 West 56th Street.

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895.



Simple and Absolutely Air Tight

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires, Hartford Dunlop Clincher Motor Tires, Fisk Detachable Motor Tires, and New Goodyear Detachable Motor Tires; our No. 777 Motor Tire Valve being the standard for 2 1-2 inch and 3 inch tires and our No. 725 Motor Tire Valve being the standard for tires larger than 3 inches.

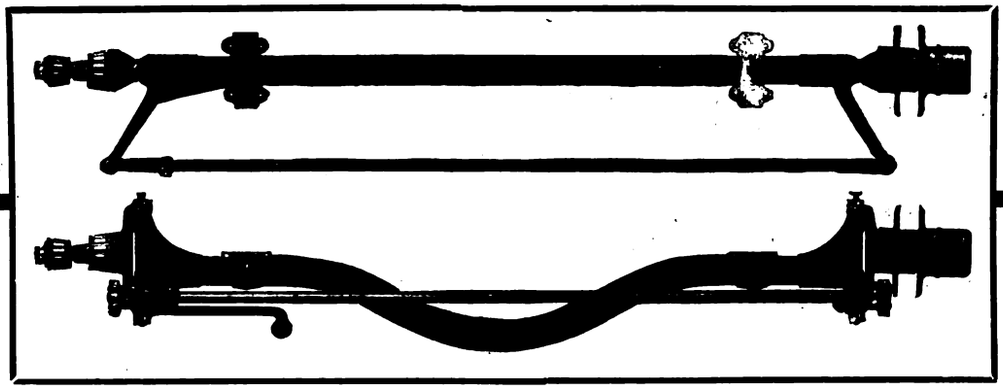
SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

Manufactured by

A. SCHRADER'S SONS, Inc.

28-30-32 Rose Street, New York.

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TIMKEN PRODUCTS

ARE STANDARD.

HERE'S THE PROOF:

America's Best Automobile Builders Using Timken Roller Bearings and Axles on 1906 Cars.

WINTON MOTOR CARRIAGE CO., Cleveland, Ohio.
PACKARD MOTOR CAR CO., Detroit, Mich.
POPE MFG. CO., Hartford, Conn.
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ROYAL MOTOR CAR CO., Cleveland, Ohio.
H. H. FRANKLIN MFG. CO., Syracuse, N. Y.
KNOX AUTOMOBILE CO., Springfield, Mass.
KNOX MOTOR TRUCK CO., Springfield, Mass.
OLDS MOTOR WORKS, Lansing, Mich.
REO MOTOR CAR CO., Lansing, Mich.
NORTHERN MFG. CO., Detroit, Mich.
DAYTON MOTOR CAR CO., Dayton, Ohio.
BUCKEYE MFG. CO., Anderson, Ind.
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ACME MOTOR CAR CO., Reading, Pa.
DORRIS MOTOR CAR CO., St. Louis Mo.
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AUSTIN AUTOMOBILE CO., Grand Rapids, Mich.
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MICHIGAN AUTO CO., Kalamazoo, Mich.
HEWITT MOTOR CO., New York City.
NAPIER MOTOR CO., Jamaica Plains, Mass.
AUTO VEHICLE CO., Los Angeles, Cal.
RAPID MOTOR VEHICLE CO., Pontiac, Mich.
MACK BROS. MOTOR CAR CO., Allentown, Pa.
N. Y. TRANSPORTATION CO., New York City.
ELLWELL-PARKER CO., Cleveland, Ohio.
BERKSHIRE AUTO CO., Pittsfield, Mass.
SMITH AUTO CO., Topeka, Kan.
THE ADAMS CO., Dubuque, Iowa.
LOUIS S. ROSS, Newtonville, Mass.
GAETH AUTOMOBILE WORKS, Cleveland, Ohio.
DOLSON AUTOMOBILE CO., Charlotte, Mich.
HOLSMAN AUTOMOBILE CO., Chicago, Ill.
THE ADAMS MFG. CO., LTD., London, England.

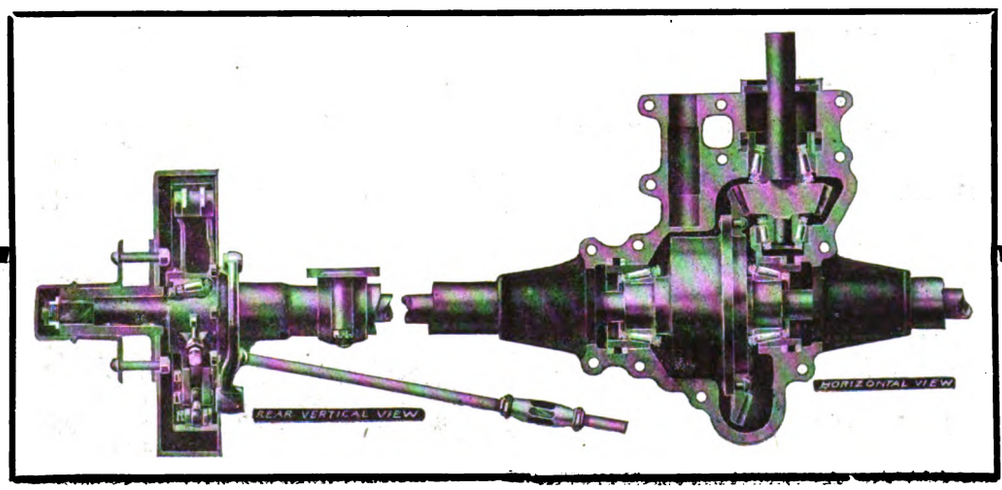
We make every type of front and rear axles for every kind of work, and many ranging from the heaviest of trucks to the lightest runabouts.

Roller Bearings, Steering Knuckles, Wheels and Channel Rims.

Eastern Branch:
219 West 46th Street,
New York City.

TIMKEN ROLLER BEARING AXLE CO.

Works and General Office, CANTON, O.



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DIAMOND CHAINS



The structural variations in automobile chains are much more striking and important than is commonly supposed. The indispensable elements in the manufacture of a high-class chain are first-class materials and workmanship. It is easier to pretend that these elements have been combined than it is to prove it.

No chain factory uses as good stock as ours. "Diamond" rivets are made from nickel steel—that's their distinguishing characteristic. Their tensile and shearing strength is from 50 to 100 per cent. higher than in the case of rivets made from inferior stock. "Diamond" side links are also made from special analysis carbon stock, and all holes are reamed to size and pitch—exclusive advantages we boast for our product. We test every pound of stock before it passes from our warehouse to our factory.

Good workmanship is not associated with poor factory equipment. The physical condition of our plant is unrivaled—in fact, it is not even approached. Making nothing but chains, we are necessarily specialists in every branch of such manufacture. The degree of attention we pay to our business is shown in the many little refinements of practice which are to be observed only in our establishment. This attention to details may not serve to explain the superiority of "Diamond" chains, but it is certainly very suggestive of it.

"Diamond" chains fit any standard sprocket. They are unrivalled for accuracy of manufacture, strength and durability.

NEW YORK SHOWS

Garden Show, Space 196

Armory Show, Space 10

CHICAGO SHOW

Space 182

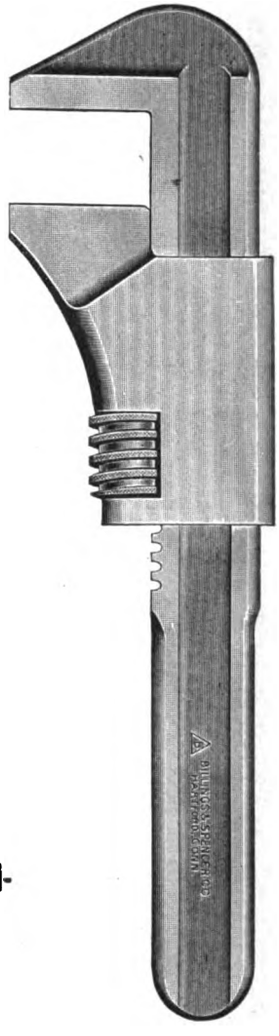
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That means that our **Auto Tools** are the strongest and most durable that can be made. They last a lifetime. The steel selected is of the highest grade. In design our tools are thoroughly up to date.





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They are handy to manipulate.

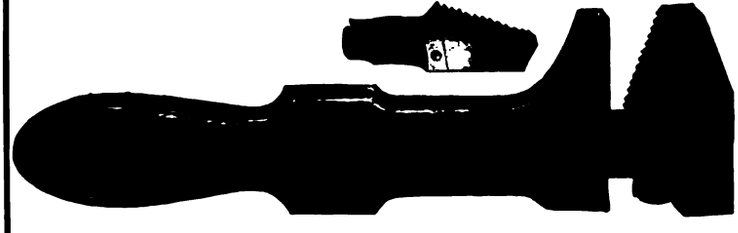
They are readily adaptable.

They are never failing in use.

THE B. & S. AUTO WRENCH is a tool as necessary to your car as the engine itself. Don't fail to get our catalog of Auto Forgings and Tools.

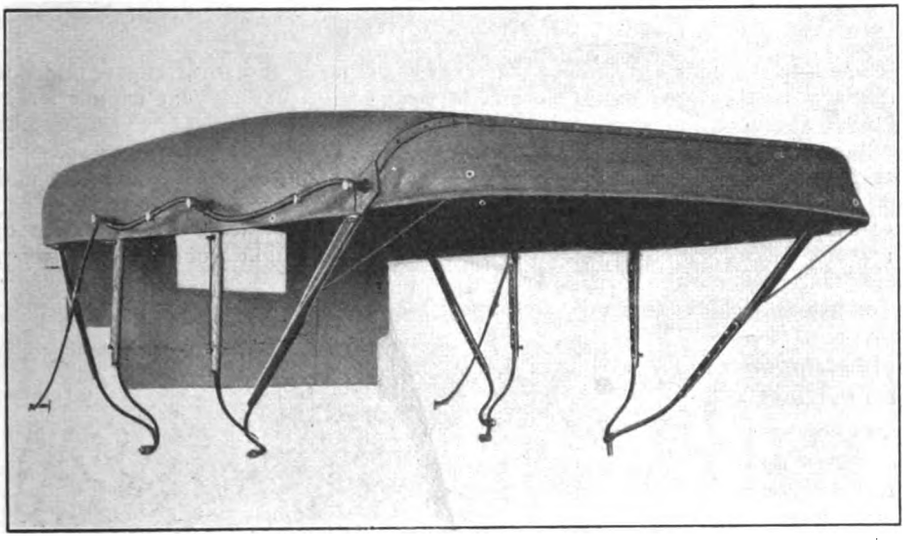
The Billings & Spencer Co.,

Hartford, Conn.



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Col. Sprague's Exhibits at the Shows.



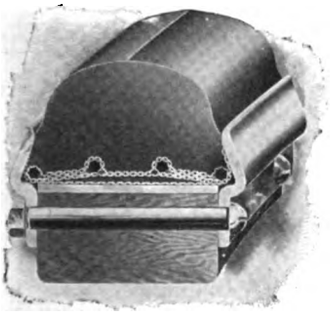
AT MADISON SQUARE GARDEN
Space No. 168 Concert Hall-
AT 69th STREET ARMORY,
Space 54 Gallery.
AT CHICAGO SHOW,
Space 140 Gallery.

The Sprague Auto Tops.

The Sprague Idea,
Made the Sprague Way

OUR NEW TOP.—See the curved irons on the bows. This is the only right way to make the bows; they are straight on the lower ends The drop forgings will stay in place, and they make a neat, substantial job. See them at the shows. Send for our catalogue.

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IMPORTANT

The Successful Commercial Vehicle Tire must be cured in one piece, with its retaining device (no matter of what variety) vulcanized into the tire as a part.

OTHERWISE THE ATTACHMENTS RUST.

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The wires in a **TURNER ENDLESS SOLID** are rust proof being imbedded in the tire

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A Spring Recoil Check

(HOUSE PATENT)

An automatic, frictional device perfectly controlling the recoil of the springs

Its attachment to the body and axle of the car is easily made and so arranged that it is flexible, so that any oscillating or lateral movement of the car or running gear cannot strain or break its parts, and no oiling or adjusting is required.

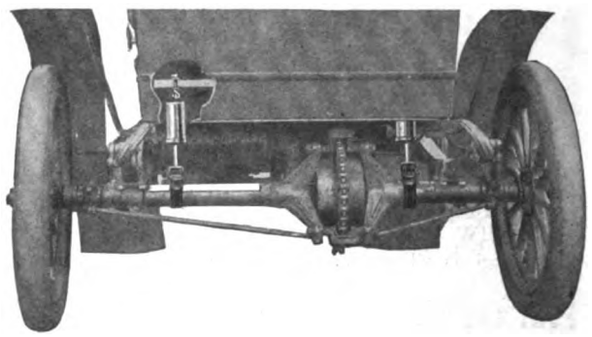
A protection against broken springs.

Prevents the quick recoil over rough places which lifts the rider from the seat and makes travel fatiguing.

Permits the free action of the springs over smooth roads, but steadies the movement of the car over rough places and to a large degree relieves the weight from the tires when striking severe obstructions in the road.

Makes fast riding, with comfort and safety, possible.

For Fuller Description send for Circular, Dept. C.



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Crankshafts and Axles forged only in Slab Form, slotted and finished to size; then oil treated in our Projectile Department. Shafts and Axles thus made of our No. 1 **AUTO NICKEL-CHROME STEEL** average:

Tensile Strength,	130,000 lbs.
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SPECIAL ALLOYED STEELS
for
GEARS, SPRINGS, VALVES, FORGINGS, ETC.

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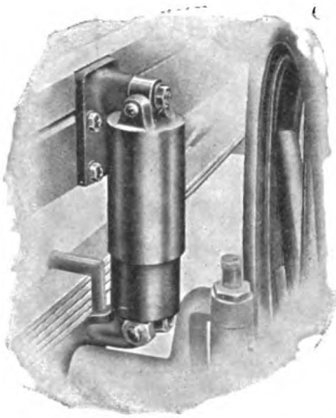
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"SHOCK ELIMINATOR."

(PATENT ALLOWED)



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THEY TRANSFER THE LOAD and strain from the springs to the axles.

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THEY LESSEN THE WEAR and tear on tires.

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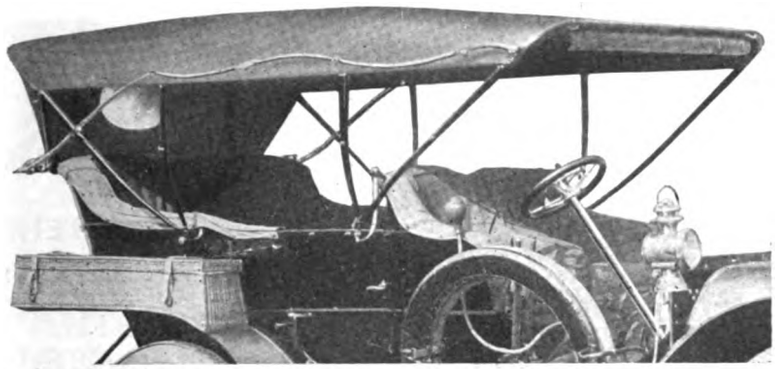
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It effects a direct saving in "up keep."

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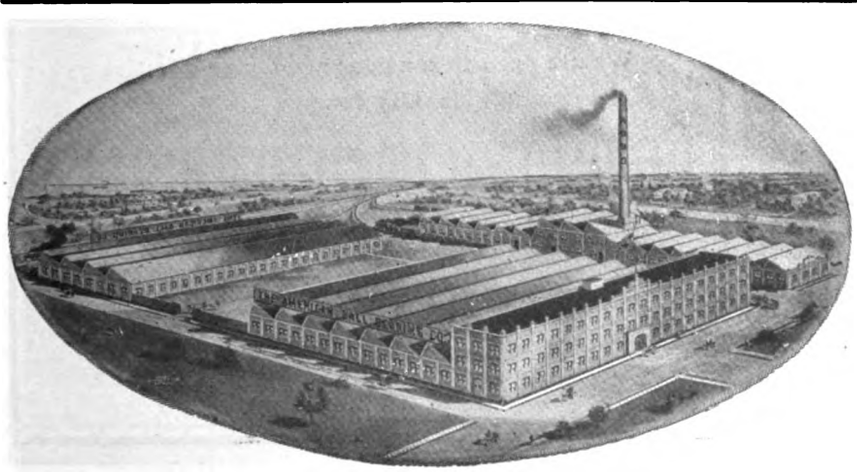
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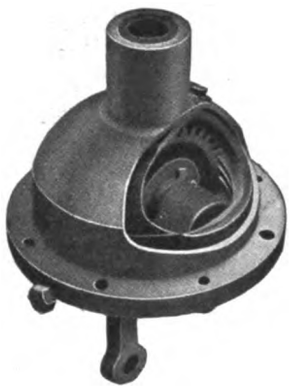
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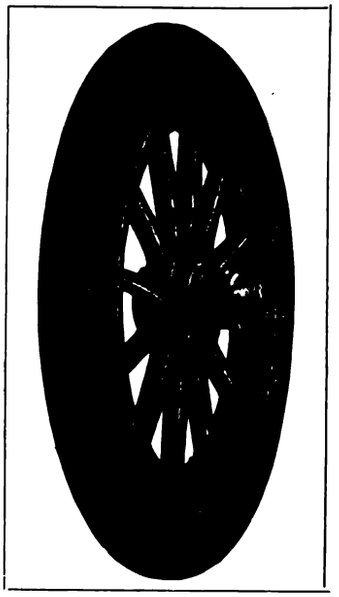
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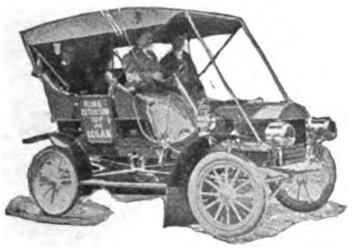
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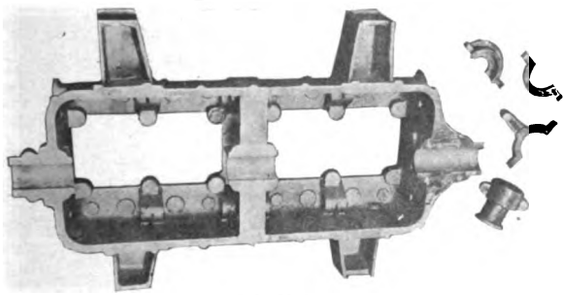


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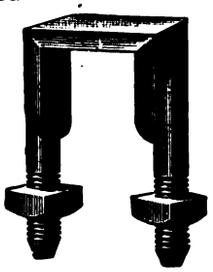
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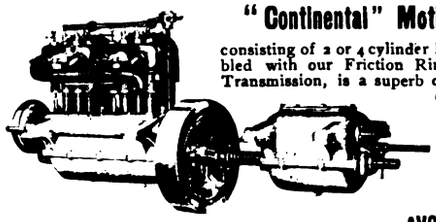
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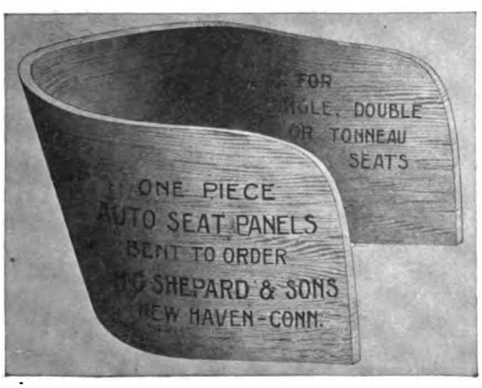
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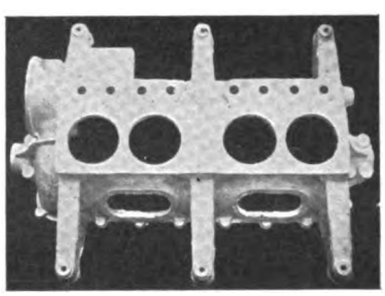
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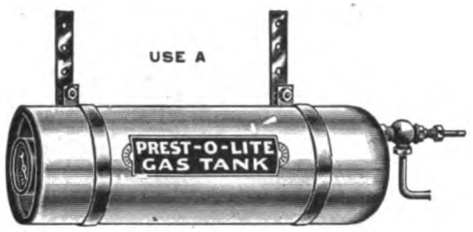
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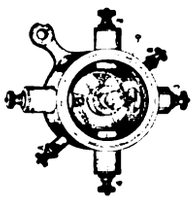
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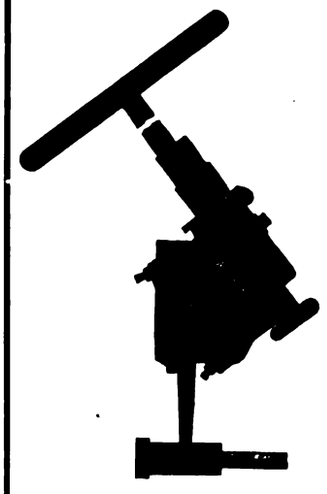
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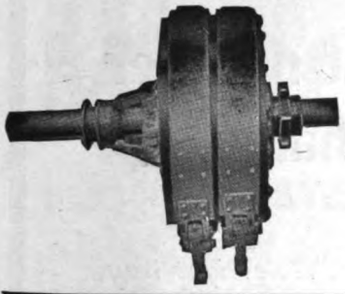
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Two Speeds and Reverse.



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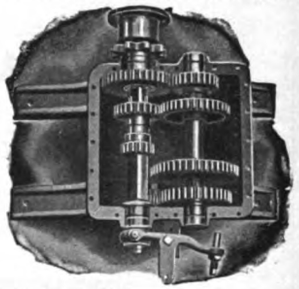
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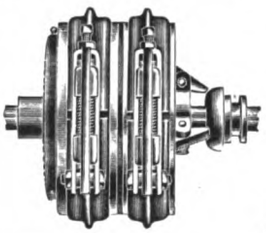


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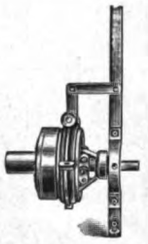
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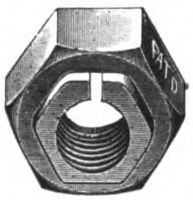
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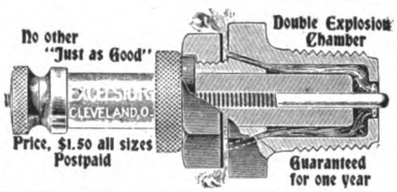
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COLUMBIA NUT & BOLT CO., Inc., Bridgeport, Conn.



THE EXCELSIOR

is the leader of Jump Spark Plugs. **It is the only Plug that can be cleaned of soot** or oil **without removing it from the engine.** Costs no more than the common kind which it outclasses in every feature. See us at New York Shows. Write for Bulletin N.

EXCELSIOR SPARK PLUG CO., Cleveland, O.

GRAY AND DAVIS

"Makers of Smart Automobile Lamps."

Be Sure YOUR CAR is Equipped With Them. **AMESBURY, MASS**



HIGHEST EFFICIENCY—LONGEST LIFE—MOST ECONOMICAL

COLUMBIA DRY CELLS

NATIONAL CARBON COMPANY, Cleveland, O.



SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

On Contract Basis.

Our positive power driven sight feed **OILER** will interest you. Write for description.

Auto Brass & Aluminum Co., Flint, Mich.

HIGH-GRADE LAMPS

Acetylene Gas and Oil

ATWOOD MFG. CO., Amesbury, Mass.

THE

WITHERBEE BATTERY

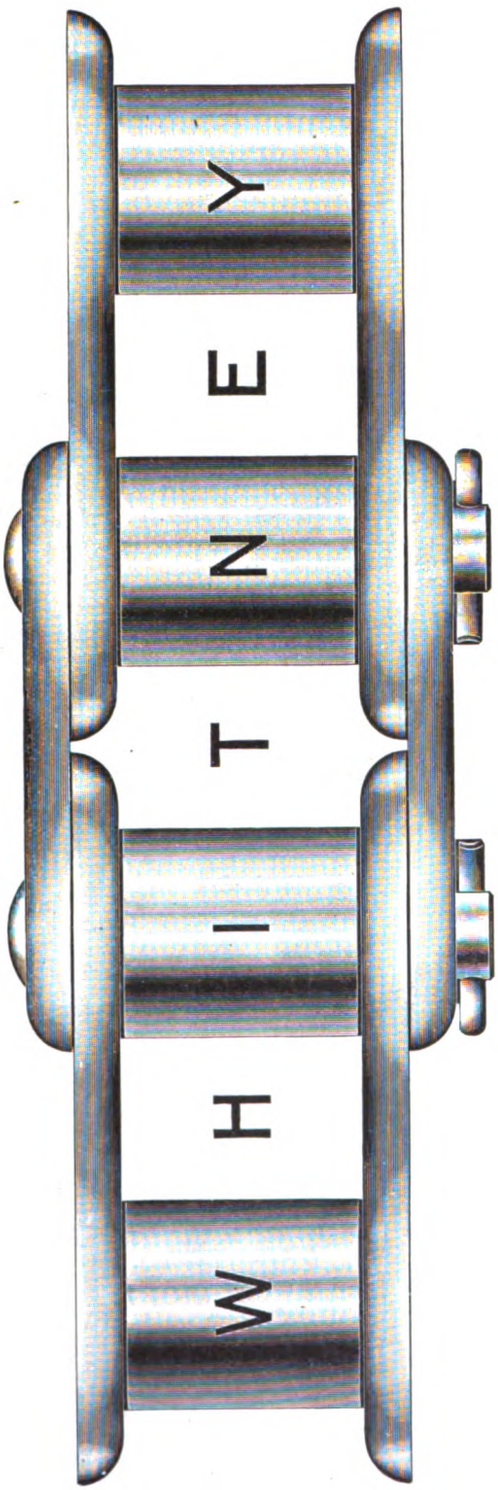
Solves the Ignition Problem

WITHERBEE IGNITION CO.,

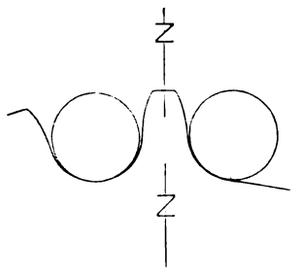
541 West 43d Street, New York

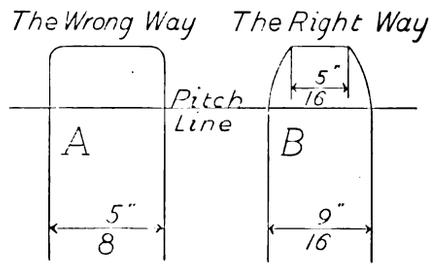
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At the Automobile Shows notice the great number of cars equipped with "Whitney" Chains.

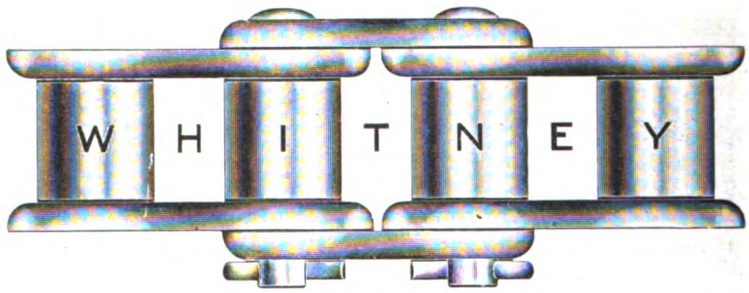


DETACHABLE TYPE PATENTED.





SECTION OF SPROCKET TEETH THROUGH LINE Z-Z.
B- Shows Correct Section for "WHITNEY" Chain No. 7.



CHAIN No. 7. FULL SIZE.

Thousands of Chains have been damaged by interferences and unfavorable conditions.

In designing your car select the chain you consider right and leave plenty of space for a wider and larger chain.

Are your Sprockets cut to the correct bottom diameter with cutters correct in form?

Are your Sprocket teeth too wide and too straight on the sides?

Have the sharp corners of your sprocket teeth been removed after cutting?

Are your sprockets in line?

As a manufacturer do you inspect every sprocket by comparing it with a correct model or do you accept anything so long as it has the right number of teeth?

THE WHITNEY MFG. CO., Hartford, Conn.

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MORGAN & WRIGHT TIRES

stand without a peer in point of the superior excellence of each individual tire

We have no special tires for special occasions.

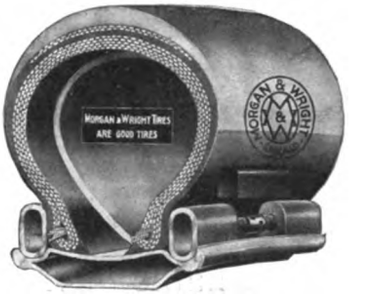
Every tire is made as carefully as tho the reputation of Morgan & Wright depended upon **its** behavior.

Every tire represents a premeditated and determined effort on the part of Morgan & Wright to secure and hold **your** tire business—and we make no bones of saying so.

This insistence upon **individual** merit has caused these tires to be the most generously advertised tires **from user to user** of any tires on the market.



Investigate them at the New York Shows.
Clincher, Dunlop, Bailey "Won't Slip" Tread.



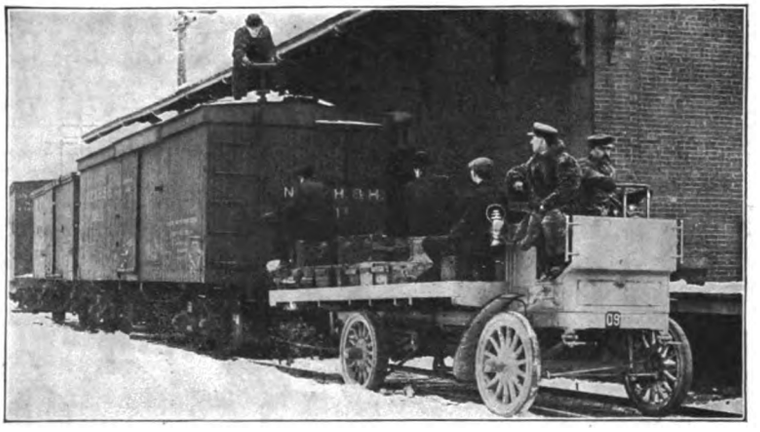
SHOW SPACES:

Madison Square Garden, No. 83

69th Regiment Armory, No. 41

KNOX Waterless Commercial Cars.

PULLED FREIGHT CARS—BIG KNOX TRUCK MOVES 73,450 POUNDS OF FREIGHT UP GRADE.—To satisfy their curiosity, employes of the Knox Automobile Company made a test yesterday morning of the pulling capacity of one of the new Knox trucks, with rather remarkable results. In spite of the bad weather conditions, the truck was able to draw easily two freight cars, one of them heavily loaded, the total weight hauled amounting to 36 tons. The truck has just been completed for Marshall Field & Co., the great Chicago dry goods firm. It was known that it was a powerful machine, and to test it permission was obtained from the railroad officials to try it on cars on the New England track at Wilbraham Avenue. The truck was then connected with two freight cars, one weighing 41,245 pounds loaded, and one 21,200 empty. The truck itself was loaded and weighed altogether 11,000 pounds, making a total of 73,450 pounds. As there was snow on the ground, a little sand was sprinkled to give the wheels a grip, but no chains or any attachments were put on the wheels. Without any difficulty the truck started up the cars, the tracks being slightly up grade at this point. It was afterwards discovered that the brakes were partially set on one of the cars.—(Springfield Union, Dec. 12, 1905.)



We have recently received orders from Marshall Field & Company, Carson, Pirie & Scott, Chicago; Sterns Brothers and National Lead Company of New York, for these trucks. Firms of this kind do not spend thousands of dollars for a thing until they are thoroughly convinced that it is the best on the market.

WRITE FOR PLEASURE AND COMMERCIAL CATALOGUE.

KNOX AUTOMOBILE CO. - - SPRINGFIELD, MASS.

Oldest and largest manufacturers of gasoline commercial cars. Members A. L. A. M.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who are licensed to manufacture or sell under the G & J Patents:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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At the
NEW YORK SHOW
69th
Regiment Armory
Jan. 13th to 20th

National

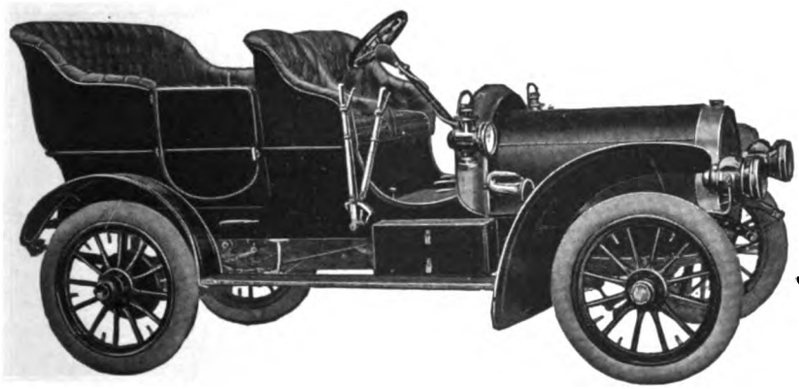
RELIABILITY AND ENDURANCE



At the
CHICAGO SHOW
Coliseum
Spaces 76-77-78
Feb. 3d to 10th

was demonstrated in a most convincing way on Nov. 16-17, 1905, at Indianapolis, when a **National Stripped Stock Car made 1094 3-16 miles in 24 hours, breaking the World's Record by 78 9-16 miles.**

WHY BUY AN EXPERIMENT, when for the same price you can get a car that has PROVEN ITS WORTH.

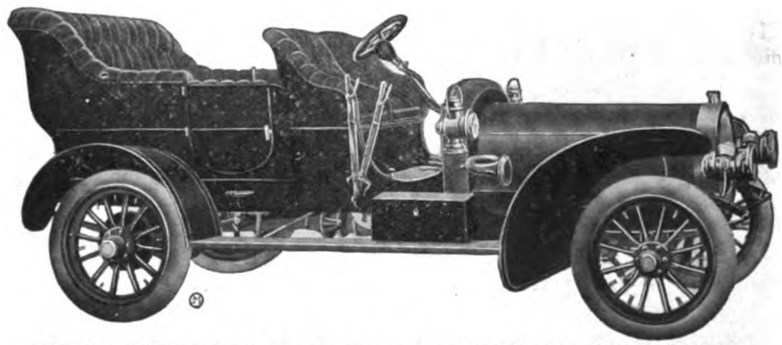


The Car That Broke the World's Records

National Model D. Four Cylinder. 35-40 H. P. Price $3.000

A CAR VERY MUCH AHEAD OF THE TIMES, and which will be extensively copied in the near future.

An Innovation in Touring Cars



National Model E, Six Cylinder, 50-60 H. P. Price $4,000

WRITE FOR PARTICULARS

National Distributors

LINSCOTT MOTOR CO., 163 Columbus Ave., Boston.
HOMAN & SCHULZ CO., 134 W. 38th St., New York.
RALPH TEMPLE AUTO CO., 311 Michigan Ave., Chicago.
TIOGA AUTO CO., Broad and Tioga Sts., Philadelphia.
LIBERTY AUTO CO., 138 Beatty St., E. E., Pittsburg.
NATIONAL MOTOR CAR AGCY., 705 S. Main St., Los Angeles.
COLONIAL AUTO CO., 3944 Olive St., St. Louis.
McKINLEY MOTOR CAR CO., Rochester, N. Y.
FISHER AUTO CO., 330 N. Illinois St., Indianapolis.
ROBT. F. BODA & CO., 68 E. Noble St., Columbus, O.
FAWKES AUTO CO., Minneapolis and St. Paul.

NATIONAL MOTOR VEHICLE COMPANY, 1007 EAST 22d STREET INDIANAPOLIS, IND.

Member American Motor Car Manufacturers Association, Chicago.

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Why No Car Should Satisfy You

BUT

The Thomas Flyer

It is impossible in these announcements to convey a complete and comprehensive idea of the manifold mechanical superiorities of the Thomas-Flyer. But it is possible to point out a few dominant features peculiar to this magnificent car which have won for it the high honor of representing America against the world in automobile manufacture.

From time to time we shall try to describe for you special features which are essential to your comfort and satisfaction and which you should insist upon having. In this announcement we group a few of the special Thomas advantages, calling special attention to the invaluable Thomas Safety Device.

THE CAR YOU BUY SHOULD PROVIDE:—A speed of from six to sixty miles per hour on the high gear, quietly, smoothly, without rock or jar; fifty horse power; mechanically operated valves; and separate cylinders—great flexibility, enabling you to take the steepest grades or the most crowded streets without change of gear. The car you buy should be able to take a 14 per cent. grade, etc.

THE CAR YOU BUY should have a dust-proof body. The Thomas body is patented. There is not a straight line in its design. Dust suction is entirely eliminated. The dust does not rise until it is fifty feet behind the car. Ladies can travel an indefinite distance without fear of dusting their traveling costumes.

THE CAR YOU BUY should seat seven, as does the Thomas—two in front and five in the rear. It should have two revolving chairs which are removable and may be placed under the cushion. It should be luxuriously upholstered in the best hand buffed leather, curled gray hair and springs. Shawl and coat racks; luggage box for two large suit cases, straps, tire and tool box.

THE CAR YOU BUY should have a clutch equal to the Thomas clutch, on which patents are pending. Three metallic discs—a perfect clutch, not susceptible of any improvements. After the most rigid and exhaustive tests of thousands of miles under adverse conditions, with extra heavy loads, the Thomas clutch has the reputation of never having shattered the car in starting; slipped or given the least trouble.

THE CAR YOU BUY should have a transmission equal to the patented Thomas transmission. A point of most vital importance. Selective type. Four speeds forward and reverse. Noiseless. Possesses the exclusive features of roller bearing on forward end of main transmission shaft and five Hess Bright bearings and large ball-thrust bearing with drive direct on the high speed without a gear or mesh. Very large spur gear differential. Wide faced gears and anti-stripping device which renders it absolutely impossible to strip the gears. Gears may be changed between high and low without passing through intermediate gears. The strongest and most efficient and most costly transmission in use.

THE CAR YOU BUY should have the commutator on the dash board. Various attempts have been made at home and abroad to locate the commutator on the dash board. The Thomas method has proven successful. The others have not.

THE CAR YOU BUY should have a single coil. With one exception all attempts to accomplish this have been unsuccessful save in the case of the Thomas. Only one adjustment of vibrator required for all cylinders.

The Celebrated Thomas Safety Device

You do not need to be told how many lives have been lost by cars backing down hill. Are you not entitled to be guaranteed against the danger of any such accident? Is not the Thomas Safety Device absolutely essential to your safety? Every Thomas automobile turned out is equipped with the Thomas Safety Device, a peculiar ratchet cast integral with the brake and sprocket drum on the rear hubs, the co-acting pawl being pivoted to the brake spider. It is operated by hand lever on the right side of the dash board, to which the pawl is connected by a wire cable. This safety device positively prevents the car from backing down hill should the engine stop. It can be used in place of the brake when stopping on a hill. This makes the Thomas car particularly adapted for use in hilly sections, and renders accidents from backing an impossibility. It is one of the distinctive and exclusive features of the Thomas.

Get in touch with the nearest Thomas representative and place your order at the earliest possible moment. Write for ilustrated catalogue.

The Thomas Motor Co., - Niagara St., Buffalo, N. Y.

Members Association of Licensed Automobile Manufacturers.

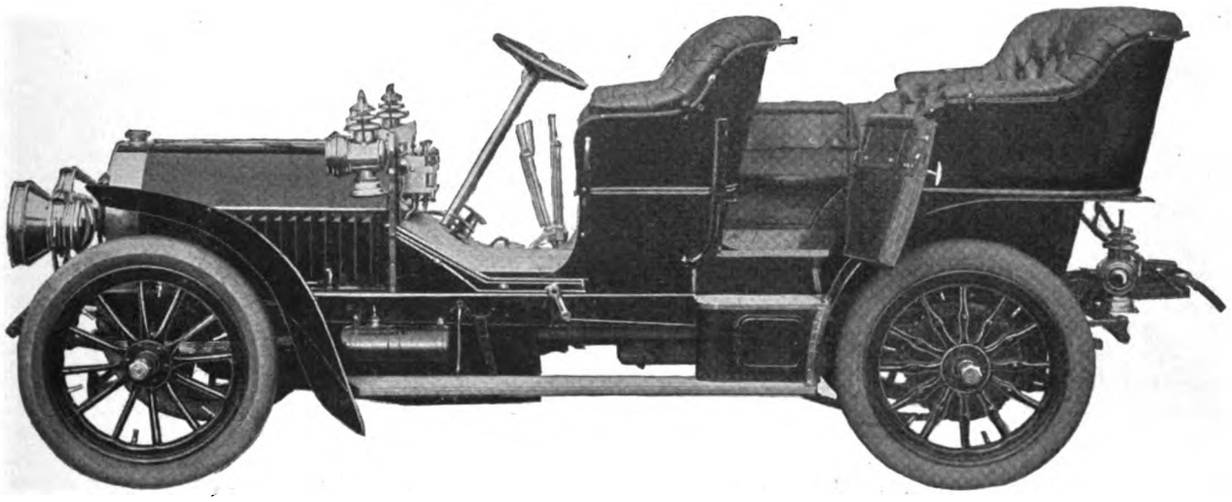
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. **30-35 H. P., $5,000.**

Both with complete touring equipment.



TYPE H. LOCOMOBILE 30-35 H. P. $5,000.
Top and Luggage Carrier extra.

"It was hardly to be expected that the 1906 product of the Locomobile Company of America, manufacturing in Bridgeport, Conn., would incorporate any very marked departures from previous practice. To have done so would have been somewhat in the nature of gilding refined gold. By the early adoption and subsequent perfection of such advanced constructional features as four cylinder vertical motors, enclosed timing gears, automatic carburation, sliding gear transmission, yielding a direct drive on the highest speed, and solidly forged axles, it produced a car that was a credit to the makers and to those who used it. This being the case, the designers have been at liberty to confine their attention to the improvement of the minor details from year to year, the absence of distinctly radical changes in the make-up of the machine allowing opportunity for a process of evolution and elimination in the lesser parts which has worked out a most excellent result."

(From a recent issue of THE MOTOR WORLD.)

For 12c in stamps we will mail 12 souvenir postal cards showing various views ot the LOCOMOBILE in the Vanderbilt Cup Race, making the best showing of any American car in any international contest. For 10c in stamps we will mail a five-color poster showing the LOCOMOBILE finishing the race. Printed matter of 1906 cars on application.

The *Locomobile* Company of America, Bridgeport, Conn.

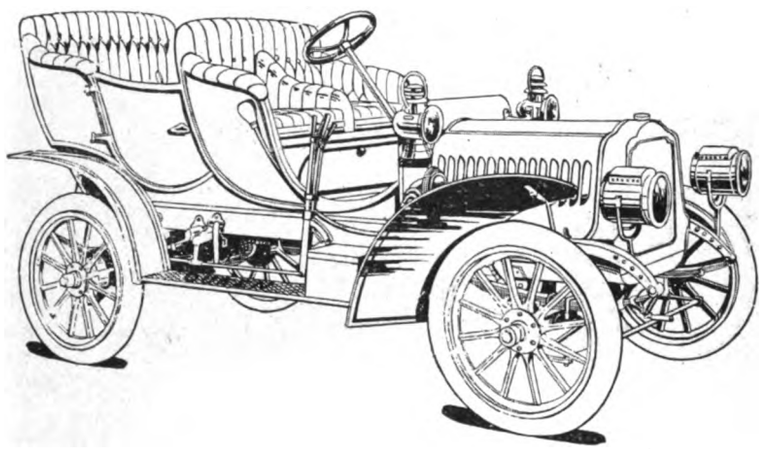
NEW YORK, Broadway and 76th St.
PHILADELPHIA, 240 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

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QUEEN AUTOMOBILES FOR 1906



3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P. Price, $2,000.

SPECIFICATIONS

DRIVE	Shaft, bevel gear.	**FRONT AXLE**	Solid-Forged.
FRAME	Pressed Steel.	**GROUND PARTS**	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
WHEELS	32 x 4.		
WHEEL BASE	101 inches.		
TRANSMISSION	Sliding gear.	**EQUIPMENT**	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

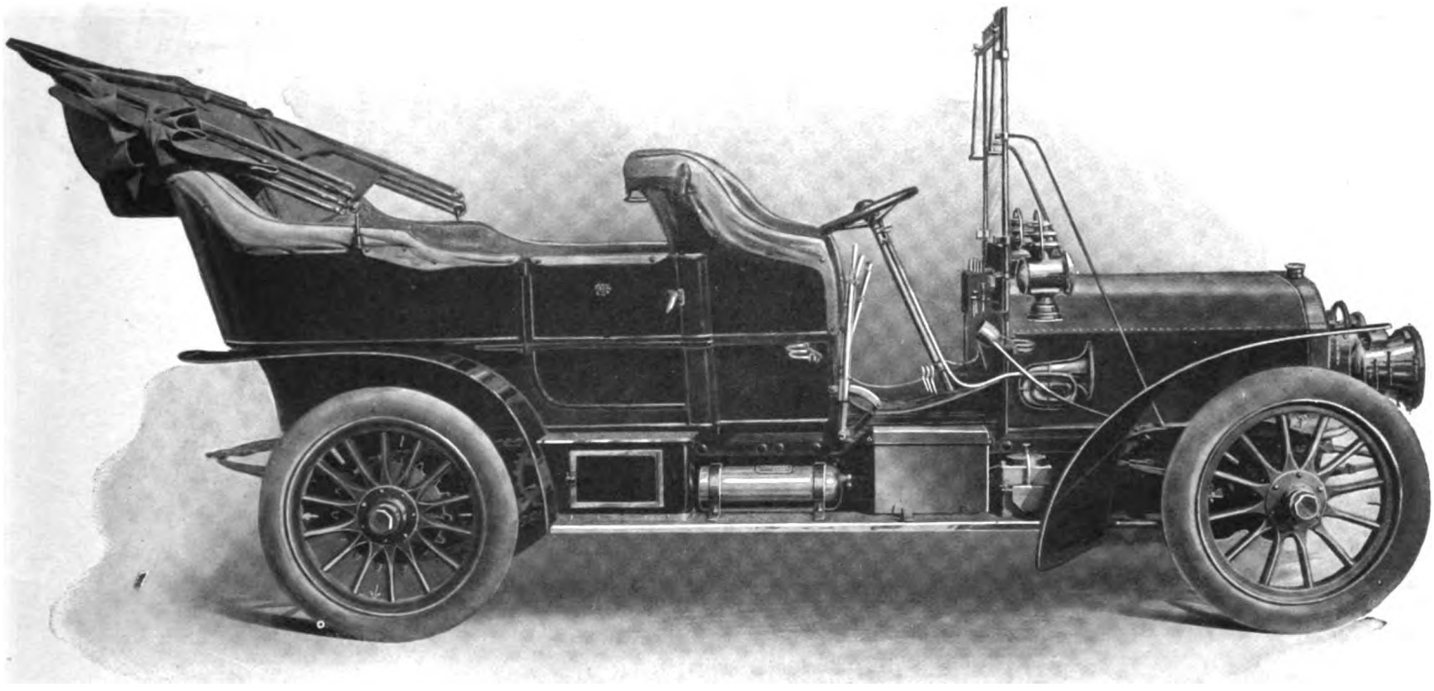
C. H. BLOMSTROM MOTOR CO

DETROIT, MICH.

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We will Exhibit in Madison Square Garden Automobile Show January 13-20. Space No. 39.

The "Matheson" touring car is designed to compete principally with the very finest and highest priced cars of foreign make. Its exceptional qualities and superior operation can only be fully appreciated by ***actual comparison*** with others, ***part for part,*** and by ***actual long-distance road demonstration.*** It is, without any exception, far and away the most thoroughly mechanical, the strongest built, the most powerful, the fastest, the handsomest and the most completely equipped car on the market to-day.



CHARACTERISTIC FEATURES:

Self-starting from the seat.
Make-and-break ignition with magneto.
Four-cylinder vertical engine.
All valves in the head mechanically operated.
Valves never require regrinding.
All valve-actuating mechanism, on top of engine quickly accessible.
Absence of Vibration.
Noiseless in operation.
Automatic, wide-range, multiple-spray carburetor; will stay adjusted and vaporize any grade of gasolene.
Automatic speed control by governor.
Automatic lubrication, multiple, positive, force feed.
Clutch, multiple-disc, metal to metal. Will run thousands of miles without adjusting.
Sliding-gear transmission, chrome nickel steel.
Roller bearings on all wheels.
Double Chain drive.
Extra large bearings throughout, insuring long life.
Hess-Bright (imported) ball bearings on transmission shafts, differential shafts, steering knuckles, and in clutch actuating mechanism.

Four especially powerful brakes; two are water-cooled.
Hill-pawl prevents car backing down grade.
Irreversible steering gear.
Axles, special nickel-steel forgings; I-beam pattern.
Nickel-steel frame, cold rolled pressed.
Flexible reciprocating rotary spring suspension, eliminating all torsional strains on front and rear springs.
Long half-elliptic springs front and rear.
Radiator, honeycomb type.
Gasolene tank, capacity 20 gallons.
Metal pan underneath car.
Tires, 36 x 4 inches front; 36 x 4½ inches rear.
Wheel base, 40-45 H. P., 112 inches. 60-65 H. P., 118 inches.
Side-entrance aluminum bodies, superbly finished; the unparalleled production of J. M. Quinby & Co. and Moore-Munger Co., luxuriously upholstered.

"America's Finest Motor Car."

"Matheson"

40-45 H. P. $6 000. 60-65 H. P. $7,500.
With Complete Equipment Below.

Weight, 40-45 H. P., 2,960 lbs.; 60-65 H. P., 3,160 lbs.
Speed guaranteed: 40-45 H. P., 60 miles per hour. 60-65 H. P., 70 miles per hour. Geared for greater speed, if desired.

Our Complete Equipment Consists of

Cape-Carte top.
Storm curtains,
Standing glass front,
Detachable folding seats, with lazy backs,
Foot cushions,
Mats front and rear,
Large leather wallet,

Toilet set of comb, brush, mirror, whisk broom and soap case,
Tool and accessory lock drawers,
Folding baggage rack,
Tire irons for carrying extra tires at side of car,
Tire covers, waterproof,
Coat rail,

Truffault-Hartford shock absorbers,
Acetylene generator or gas tank,
Acetylene headlights, oil side lamps, tail lamp,
Large dragon horn,
Chime horn,
Gasolene gauge,
Grademeter,

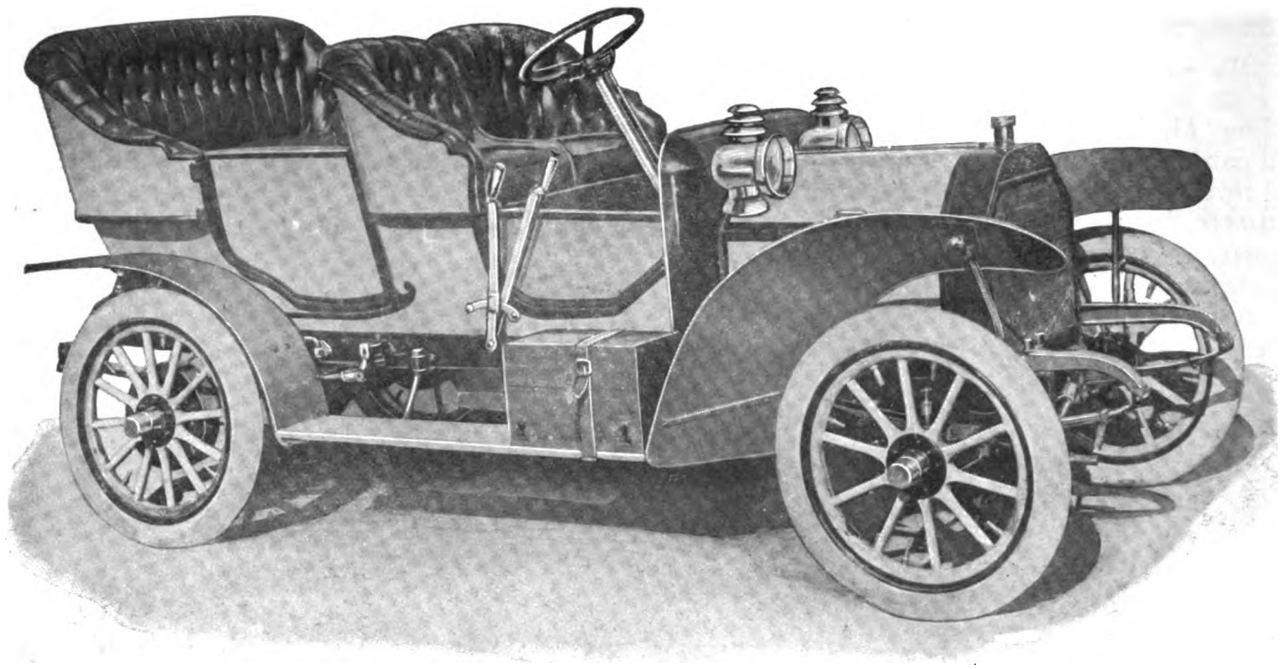
Reserve tank lubricating oil,
Jones Odometer-Speedometer,
Water-gauge,
Dashboard 8-day clock
Monogram on doors,
Complete set tools and tire repair outfit,
Extra parts, etc.

Complete catalogue giving full details mailed on request.

MATHESON MOTOR CAR CO., - - - WILKES-BARRE, PENN.
Member Association Licensed Automobile Manufacturers. (Formerly Holyoke, Mass.)

N. B.—Our new factory is one of the largest and most modern automobile plants in the world.

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THE DOUBLE-ACTION OLDS,

Model L, Price $1250.

The Double-Action Olds is the most talked of car in America.

Here's why:

FIRST—Its motor has only three working parts: piston, connecting rod and crank shaft. It has no valves, no push rods, no bushing, no cam gears, no valve-stems—**IT'S SIMPLER THAN A HORSE.**

SECOND—It has an explosion to every fly wheel revolution, instead of one explosion to every other revolution. There is no idle stroke. Every stroke is a working stroke—**TWICE THE POWER WITH HALF THE WEAR.**

THIRD—It also means that you have a **CONSTANT CONTINUOUS POWER** instead of intermittent. It means the use of the high speed (direct drive) where any other car on hills or heavy going is forced into the second, or hill climbing, gears.

Write to-day for Double-Action Booklet.

OLDS MOTOR WORKS, Lansing. Mich. U. S. A.

Member A. L. A. M.

Canadian trade supplied from Canadia n Factory, PACKARD ELECTRIC COMPANY, St. Catherines, Ontario.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

Name _____

Address _____

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name _____

Address _____

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K8

Name _____

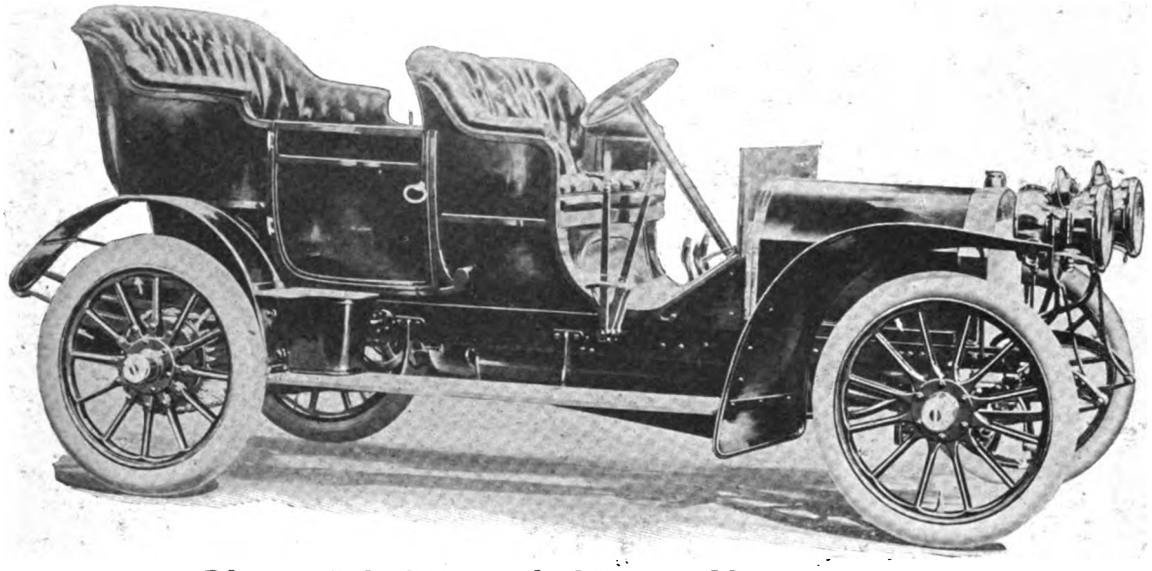
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AMERICAN LOCOMOTIVE MOTOR CAR

BERLIET

TOUJOURS PRÊT.



Sizes 24-30 and 40-45 Horsepower.

Built under BERLIET License.

Recognized Leading Foreign Car. Selected by our Engineers to reproduce in this country.
Using French materials and methods

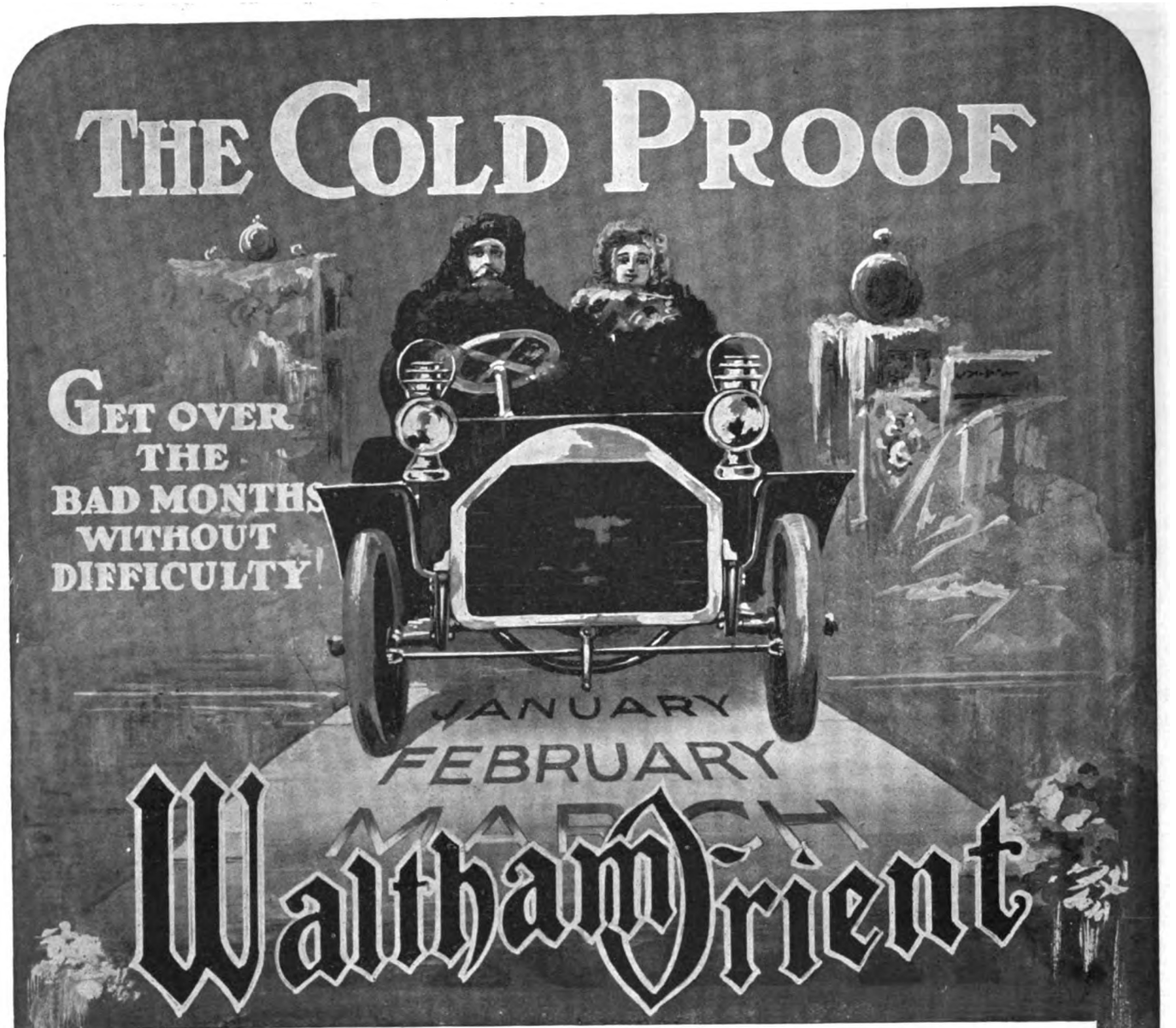
SEE OUR EXHIBIT AT THE SHOW,

69th Regiment Armory, 26th Street and Lexington Ave.

AMERICAN LOCOMOTIVE AUTOMOBILE COMPANY

1776 Broadway, New York.

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The Waltham-Orient is an Air-Cooled Car.

And the advantages of air-cooling in cars of certain power-rating are manifold, each advantage being a conclusive argument in itself.

1. There is a great reduction in weight, owing to the absence of radiator, water-jackets, pumps and plumbing, and of the water supply itself.
2. This permits lighter proportionate construction throughout, and does not require such large tires, which are more expensive to renew.
3. It reduces wear on the motor and all bearings, cuts down the expense of repairs, replacements and tire bills.
4. It eliminates completely the complicated mechanism of water radiation with its constant tendency to leak.
5. It increases power and speed of the same comparative horse-power proportionate to the decrease in weight.
6. The weight reduction increases the elasticity and responsiveness of the car.
7. Its extreme simplicity and accessibility make it possible for each owner to adjust and tune his own car without assistance from an expert but expensive repairer.
8. A woman can drive it with ease because of the absence of confusing complications of control.
9. It will run 365 days in the year. It matters not if the thermometer registers 40 degrees below zero; there is nothing to freeze.
10. It is equally immaterial if the temperature is one hundred in the shade—the Waltham-Orient system of radiation, assisted by a powerful fan, keeps a uniformly cool engine, entirely free from overheating or pre-ignition. When it is considered that the explosion in the cylinders equals 1600 degrees Fahrenheit, it is apparent that the ordinary range of external temperature is not an important factor.

Our catalogue will be sent free upon request, and will tell the entire Waltham-Orient story. We are always ready for good live agents in unassigned territory. Write for proposition.

WALTHAM MANUFACTURING COMPANY,

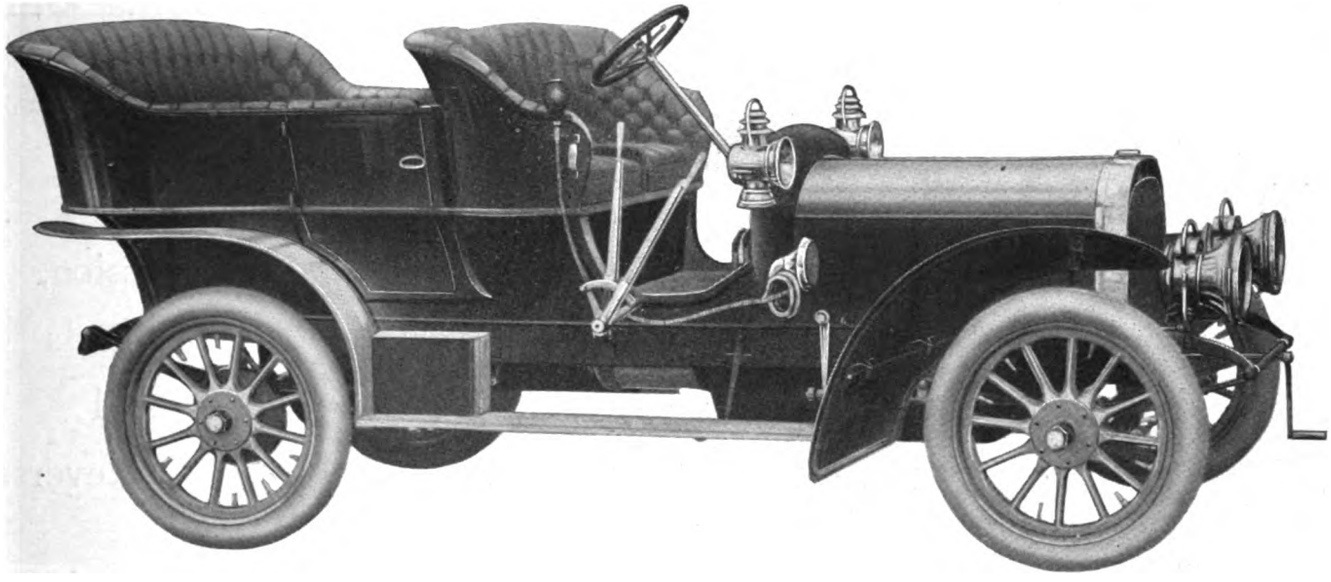
General Offices and Factory, WALTHAM, MASSACHUSETTS

Members of the Association of Licensed Automobile Manufacturers.

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HAYNES

The Car of Many Exclusive Features



The Haynes has many exclusive features that assure for it a wonderfully low maintenance and up-keep expense.

In a 6,000 mile trip, made in early winter, from Kokomo, Ind., to New York and Boston via Albany, returning over the Allegheny Mountains by the National Road, the repair expense was but $1.50.

Roller-bearings throughout, make the loss of power between the motors and rear tires less than 10 per cent, and account for the ease with which the car went up the longest and steepest grades in crossing the mountains.

The Haynes exclusively has roller-bearing engines; a Master Clutch with no wearable surfaces, which takes hold without jerking; a transmission that positively prevents burring and stripping of gears; and a roller pinion and rear axle that overcome every objection to shaft driven cars.

Other exclusive Haynes features are given in our new catalogue. For prompt attention address Desk 7 .

Model "R" Four-Cylinder Touring Car.

Vertical roller-bearing engines. Cylinders cast separately, 5⅛x6 inches, 50 H. P. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master Clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller bearings throughout. 108-inch wheel base, 54-inch tonneau, seating five people. Four to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, $3,500, f. o. b. Kokomo. Full equipment.

Model "O" Four-Cylinder Touring Car.

Cylinders cast in pairs 4¼x5 in., 28 to 30 H. P. Transmission, cooling system, lubrication, master clutch, shaft drive, universal joints, sprocket, roller pinion and roller-bearings and body same as on Model "R." 97-inch wheel base. 4-inch tires. Tonneau seating three persons. Four to 40 miles an hour on high speed. Price, $2,250, f. o. b. Kokomo. Full equipment.

"The Car The Repairman Seldom Sees"

The 1906 Haynes Models will be shown at the New York Madison Square Garden Show, Space C-7, and at the Chicago Show, Coliseum, Spaces 7 and 8.

HAYNES AUTOMOBILE COMPANY

OLDEST AUTOMOBILE MANUFACTURERS IN AMERICA.

Chicago, 1421 Michigan Ave. **KOKOMO, IND.** **New York, 1751 Broadway**

Members A. L. A. M.

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Modern Commercial Cars

(Gasoline and Electric).

Trucks, Delivery Wagons, Omnibuses and Sight-Seeing Cars

Capacities: 1 to 5 Tons. 9 to 30 Passengers.

High Powered, 4-cylinder, Vertical Motor.



Sliding Gear, Transmission, 3 speeds and Reverse.

3-TON GASOLINE TRUCK.

Built for Business and Pleasure.

☞ Our 4-cylinder Sixteen Passenger Wagonette will be placed in service between the Armory and Madison Square Garden for the convenience of visiting agents and interested parties, absolutely free.

Powerful, Quiet Running.



Comfortable, Luxurient.

12-PASSENGER GASOLINE WAGONETTE.

Look for these 1906 models at our exhibit at the Armory Show. They exemplify the highest type of modern commercial car construction.

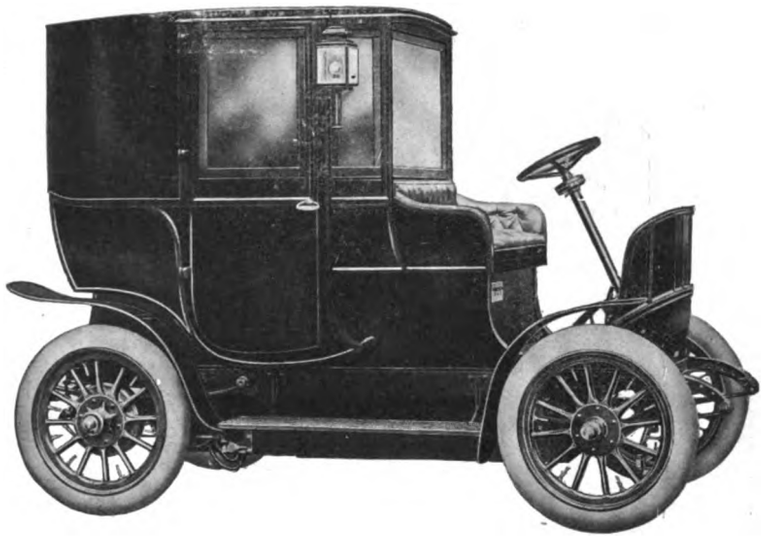
CATALOGS AND INFORMATION ON REQUEST.

THE AUTO CAR EQUIPMENT COMPANY, Mfrs., - Buffalo, N. Y.

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Columbia

New Electric Carriages



COLUMBIA ELECTRIC BROUGHAM, MARK LXVIII.

IN New York, London, Paris and other large cities Columbia Electric Broughams, Landaulets and Hansoms are the favorite vehicles of people who demand and have the best of everything.

These carriages are made for private use only and no others compare with them for motive efficiency, exclusiveness of design, perfection of detail and finish, and luxury of furnishing. For town use they provide the ideal motor service.

At the AUTOMOBILE SHOW, MADISON SQUARE GARDEN, we are exhibiting a complete line of these superb carriages—also the lighter COLUMBIA ELECTRICS, VICTORIA-PHAETON and RUNABOUTS which, in their class, are no less distinctive in point of exclusive design, and equal superiority.

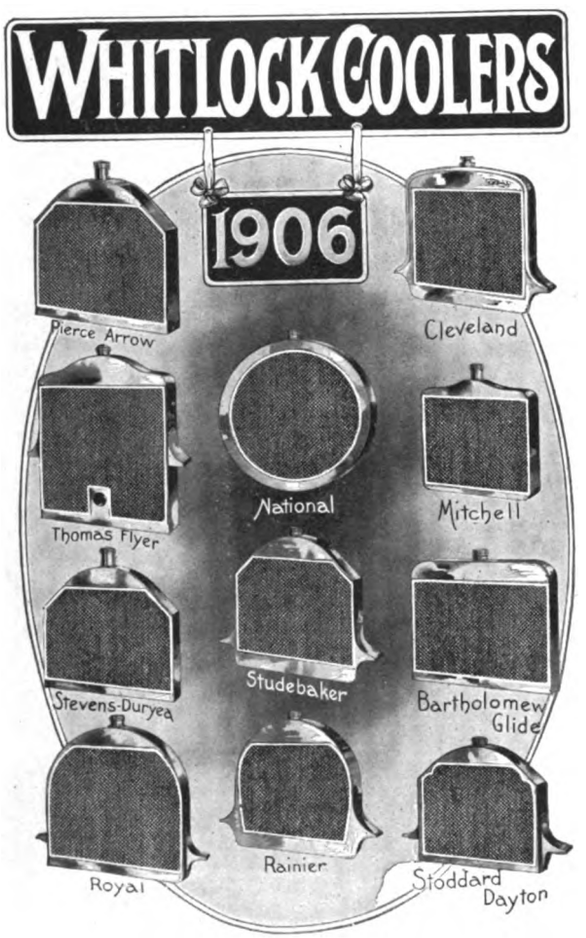
Catalogues of all Columbias, Electric and Gasolene, on request.

ELECTRIC VEHICLE CO., - - Hartford, Conn.

NEW YORK BRANCH: 134-136-138 West 39th St.
CHICAGO BRANCH: 1332-1334 Michigan Avenue.
BOSTON: Columbia Motor Vehicle Co., 74-76-78 Stanhope St.
PHILADELPHIA: Pennsylvania Electric Vehicle Co., 250 N. Broad St.
WASHINGTON: Washington E. V. Transportation Co., 15th St. and Ohio Avenue.
PARIS: A. Bianchi, 5 Rue de Berri.

Member Association of Licensed Auto Mfrs.

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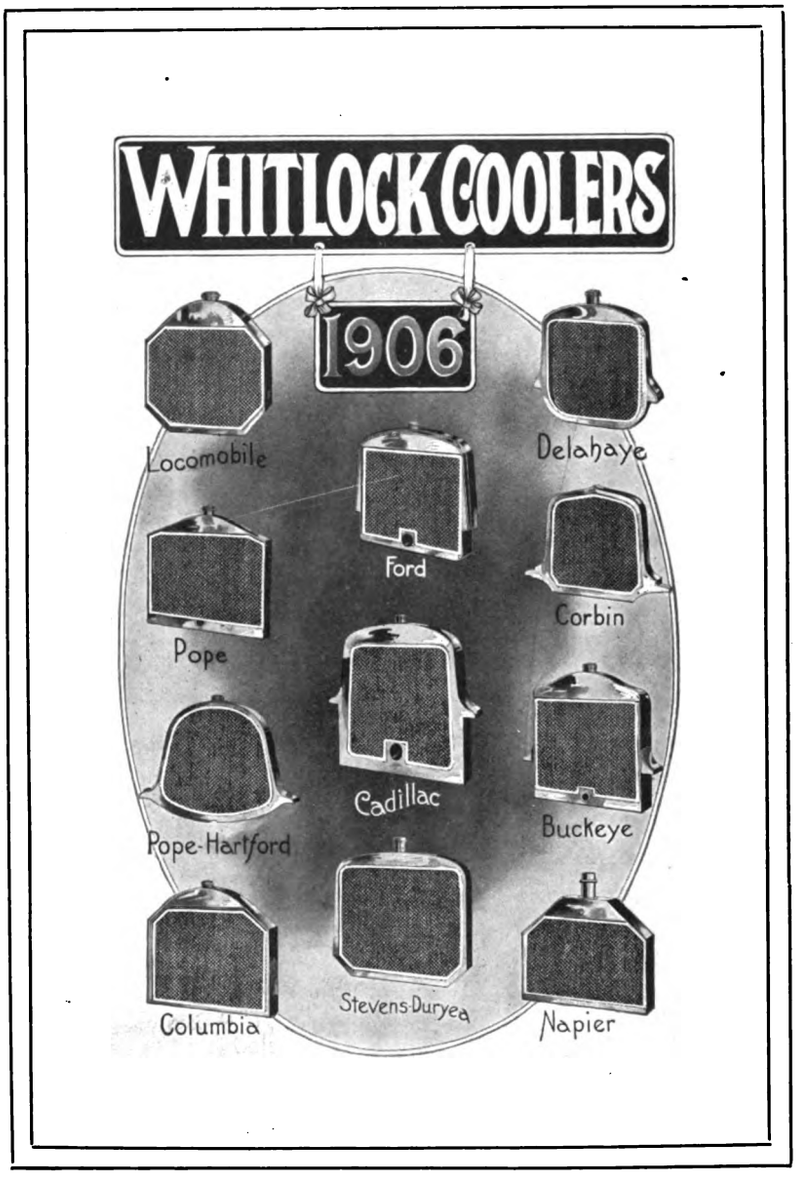
MANUFACTURED BY

THE WHITLOCK COIL PIPE CO.

Engineers, Sheet Metal Workers,
Brass Founders and Finishers.

Hartford, Conn., U. S. A.

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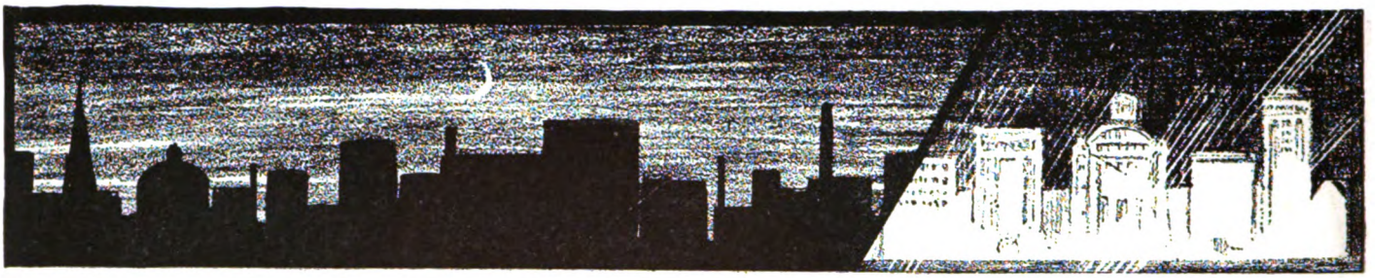
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IF YOU CAN'T BELIEVE YOUR EYESIGHT — HOW ABOUT YOUR EARS?

ASK ANY MAN WHOSE CAR IS EQUIPPED WITH

SOLAR

LAMPS

ESPECIALLY IF HE FORMERLY USED SOME OTHER KIND.

HIS ANSWER WILL SEND YOU ON A GALLOP TO THE NEAREST SUPPLY STORE.

THEY ALL SELL **SOLARS**

BADGER BRASS MANUFACTURING CO., Kenosha, Wis.

New York Office, 11 Warren Street. **Write for booklet, or ask your supply man.**

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MEMBER

39%

of the Automobile Manufacturers showing at the "Garden" and a large percentage of those showing at the "Armory", using cylinders with integrally cast waterjackets, have their

Cylinder Castings

made by

THE MANUFACTURERS FOUNDRY CO.,

Waterbury, Conn.

CYLINDER CASTINGS.

Send patterns and we will submit sample castings and quote prices.

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THE "Maxwell"

Perfectly Simple Simply Perfect

The Evolution of the Maxwell Doctrine–Maxwell Cars

The Doctrine:

1st. A cylinder of 5 inch bore with 5 inch stroke is ideal for a double opposed gasoline motor.

2nd. A double opposed motor, 5 inches by 5 inches, when properly made, develops, about 20 ACTUAL horsepower.

3rd. To use four cylinders for motors of 20 or less horsepower is unnecessary because thereby the number of wearing parts is unnecessarily increased.

4th. 20 ACTUAL horsepower, not momentum or fly-wheel horsepower, is enough for every requirement except excessive speed or extreme fashion. Therefore, a two cylinder, 5"x5" double opposed motor is the best, and IT IS AS EVENLY BALANCED AS FOUR CYLINDER CONSTRUCTION, is very much less complicated and much more reliable. It would take four 4"x4" cylinders to develop the same power as two 5"x5" cylinders, properly made.

5th. Four cylinder cars appeal largely to "Fad and Fancy" only; TWO CYLINDER CARS PRODUCE RELIABLE SERVICE.

The unprecedented successful record of the Maxwell cars during the season of 1905 prove the WISDOM of the above written DOCTRINE.

Reasons for the SUCCESS of the MAXWELL.

Common sense was the motive of its construction, not the impulse of "fad and fancy."

A 5"x5" horizontal double opposed motor for a touring car and a 4"x4" for a tourabout have been proved the *ideal* types for *service and reliability.*

MAXWELL HORSEPOWER is demonstrated by the ACTUAL CONTINUAL TEST, not by the flash system of testing which includes that resulting from the inertia of the fly-wheel. Therefore, MAXWELL HORSEPOWER is ACTUAL HORSEPOWER.

MAXWELL CARS ARE SPLENDIDLY MADE AS WELL AS PERFECTLY DESIGNED.

MAXWELL FEATURES in the PERFECT MAXWELL CAR.

MULTIPLE DISC CLUTCH, encased and running in oil, self-adjusting.

BEVEL GEAR DRIVE, combined with double universal joint avoiding filthy stretching chains.

THREE POINT SUSPENSION, resulting in the adaptability of the car to the unevenness of the road without straining the mechanism.

NATURAL CIRCULATION OF WATER, automatic in action, and eliminating all pump troubles.

METAL BODIES, eliminating the opening up of seams and the checking of bodies.

GREATEST SIMPLICITY, RELIABILITY AND ECONOMY, resulting in the lowest cost of upkeep, maintenance and operation.



Model H. 16-20 H. P. Touring Car,
Price, $1450.00.

It doesn't take a mechanic to adjust, to maintain and to run a MAXWELL car. MAXWELL CARS are sold under the *positive* guarantee that AS GOOD A CAR cannot be sold at a lower price.



Model L. 10 H. P. Tourabout.
Price, $780.00.

MAXWELL-BRISCOE MOTOR COMPANY,

CHICAGO, ILL. Main Office, TARRYTOWN, N. Y. PAWTUCKET, R. I.

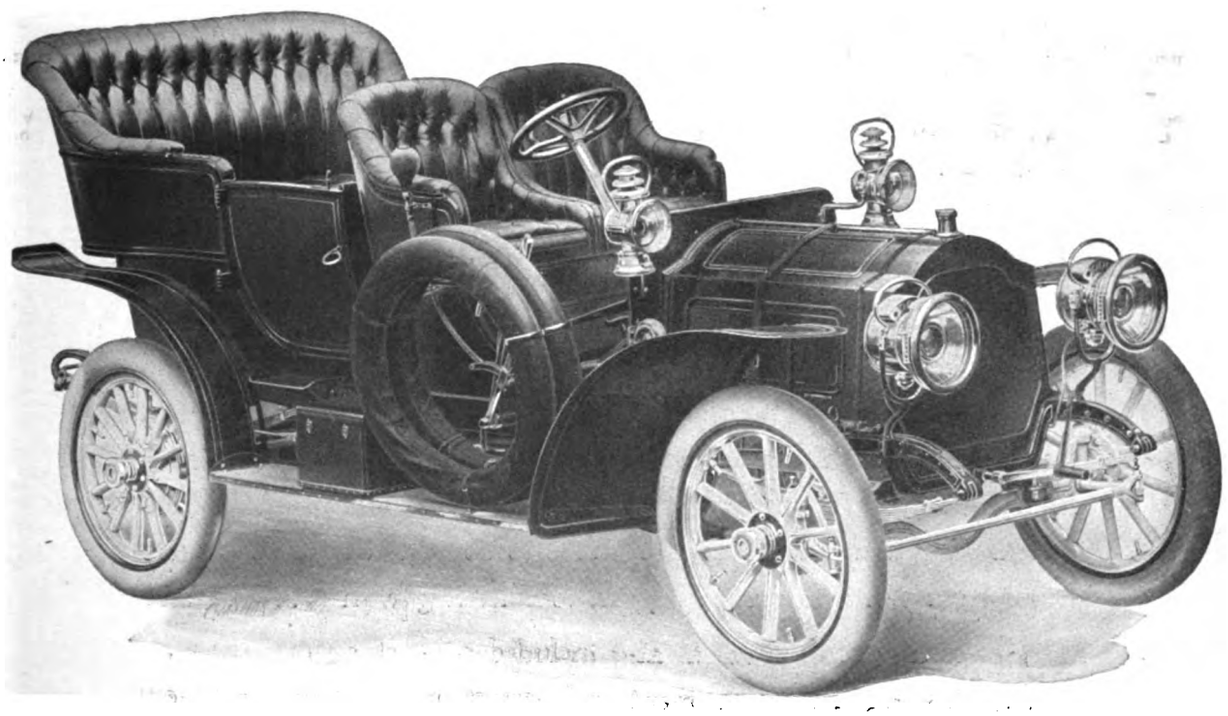
Members American Motor Car Manufacturers' Association.

BRANCHES.

MAXWELL-BRISCOE, INC., New York, N. Y.
MAXWELL-BRISCOE McLEOD CO., Detroit, Mich.
MORRISON TYLER MOTOR CO., Boston, Mass.
FISHER AUTOMOBILE CO., Indianapolis, Ind.
MAXWELL-BRISCOE CHASE CO., Chicago, Ill.
RICHARD IRWIN & CO., Foreign Representative.

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The man who visits the Packard plant sees every modern mechanical device that is applicable; sees a thousand minds concentrated on a single type of car; feels the Packard spirit of perfection; then knows why the Packard stands in a class by itself.

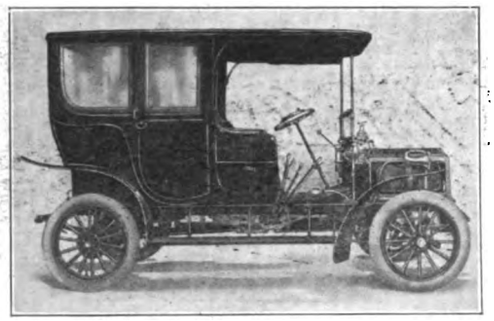
Packard Motor Car Co., Dept. 8,

Member Association Licensed Automobile Manufacturers

Detroit, Mich.

New York Branch 1540 Broadway

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WHITE LIMOUSINE



WHITE TOURING CAR

To Those Who Did Not See Our Exhibit at the Armory Show:

As was quite appropriate, White cars were exhibited in the largest space alloted to any company at either Show. No less than six types of the Model "F" White car were on view and received the admiration of thousands of visitors.

If you missed this exhibit, the best consolation for you is to read our new catalog. All of our new models are completely described and illustrated therein. There is also included a short historical sketch, tracing the gradual development and perfection of steam machinery from Newcomen's engine of 1705, to the invention of the White generator. Brief references are made to some of the more notable triumphs of White cars in each year, commencing with 1901.

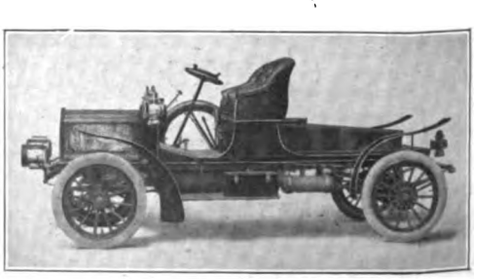
If you will write to us we will be very glad to send copy of the catalog and also to put you in touch with our nearest agent.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO



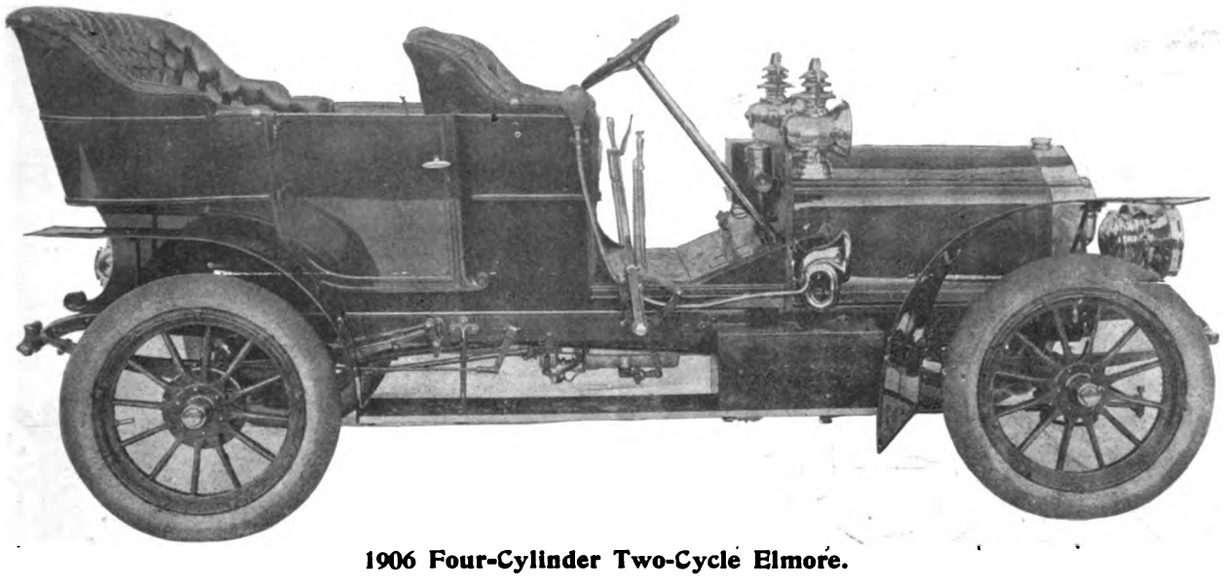
WHITE LANDAULET



WHITE RUNABOUT

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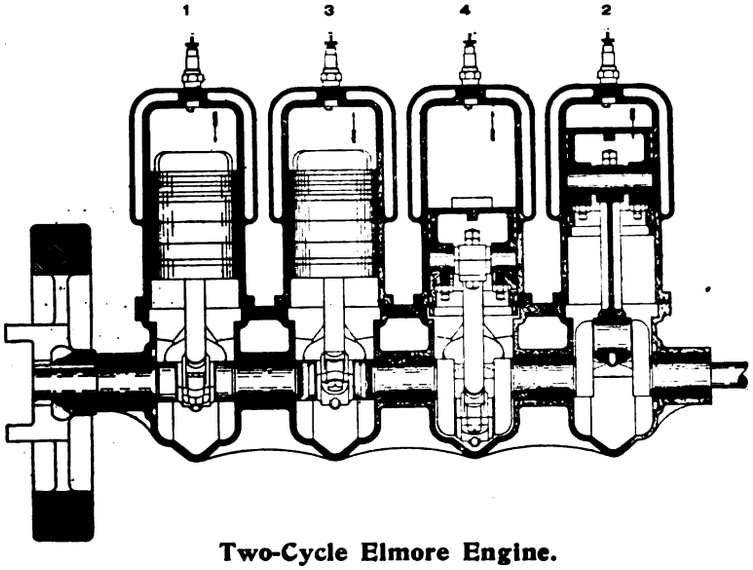
The Two-Cycle Principle Made Plain



1906 Four-Cylinder Two-Cycle Elmore.

Everybody should understand the two-cycle principle, which has given the Elmore Car its motor prominence.

A two-cycle engine means a constant, steady application of power, with no interval between the impulses. The expansive force of one explosion is only half way through when another begins.



Two-Cycle Elmore Engine.

Look at Cylinder No. 1. The piston of this cylinder is only half way down, the force of the explosion is still acting upon it, at the same time that the piston of cylinder No. 2 is just starting down from another explosion and before the force of the explosion of this piston is exhausted the third cylinder will come into action, then the fourth, and so on as long as gas is fed into the cylinder and there is a spark to fire it.

Simple, isn't it? But listen to this:

All the inlet and exhaust valves have been eliminated and actually from 18 to 20 parts on each cylinder have been done away with.

When actually fifty per cent. of the moving parts have been eliminated it is only natural that the cost of operation and up-keep is reduced fully fifty per cent.

The constant, unbroken application of power, only to be equaled in the four cycle by the use of eight cylinders and 16 valves; and the small cost of up-keep has made the **TWO-CYCLE ELMORE** the sensation of the moment.

You cannot fully understand the broad meaning of these points of superiority until you have seen the car.

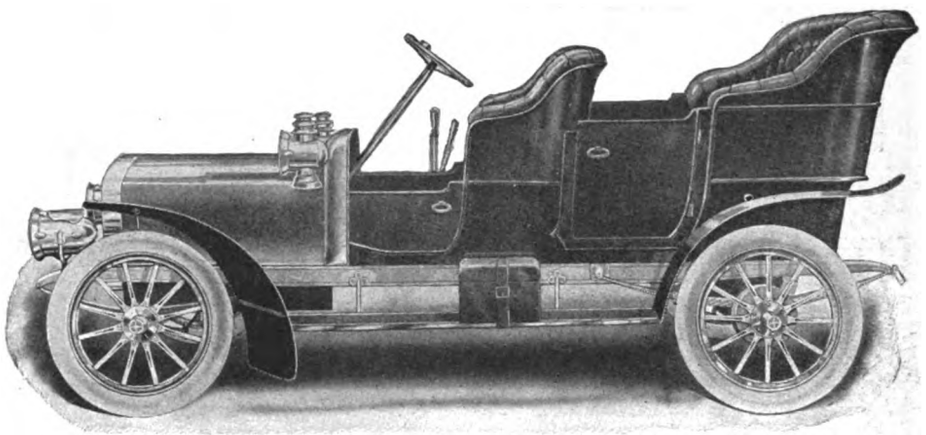
Send for catalog describing the Four-Cylinder Two-Cycle Elmore at $2,500.00 and the Three-Cylinder Two-Cycle Elmore at $1,500.00.

Will Exhibit in New York at Madison Square Garden Only. Chicago, at Coliseum.

ELMORE MFG. CO., - 1104 Amanda St., Clyde, O.

Members Association of Licensed Automobile Manufacturers.

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The Car for today, tomorrow and the years to come.

—Built by practical men.—

Aerocar

The **Aerocar** is a magnificent, handsome automobile in every detail of design, workmanship, equipment and finish. It is so thoroughly high-grade that it compares most favorably with the highest-priced cars of foreign as well as American make. It is built by practical men who know from intimate connection with the automobile trade just what the motorist most desires. The **Aerocar** embodies to the fullest extent every essential requirement, and the more minutely its mechanical construction is investigated the more conclusively will this fact be demonstrated. Hence, the severest investigation and the sharpest comparison are courteously requested.

We again direct attention to the following:

AEROCAR SPECIFICATIONS.

MODEL—A.
PRICE—$2800, f. o. b. Detroit.
BODY—"Side Entrance" Tonneau. Front doors (easily detached and complete without them.)
COLOR—Royal Blue.
SEATING CAPACITY—Five persons.
TOTAL WEIGHT—2000 pounds.
WHEEL BASE—104 inches.
WHEEL TREAD—56 inches.
TIRE DIMENSIONS—Front, 4x34.
TIRE DIMENSIONS—Rear, 4x34.
STEERING—Worm and nut.
BRAKES—Two (rear hub) and transmission.
GASOLINE CAPACITY—20 gallons.
FRAME—Pressed steel.
MOTOR POWER—24 h. p.
NUMBER OF CYLINDERS—Four.
CYLINDERS ARRANGED—Vertical in line.
COOLING—Air.
IGNITION—Jump spark with storage battery.
DRIVE—Shaft, bevel gear.
TRANSMISSION—Sliding gear.
SPEEDS—Three speeds forward and reverse.
CLUTCH—Leather-faced cone clutch.
ROAD CLEARANCE—9 inches.
STYLE OF TOP—Extension.

DETAIL INFORMATION.

The frame is of pressed steel, and sufficiently strong so that there is no possibility of its sagging or becoming distorted from the hardest possible use to which the car may be put.

The four cylinders of the motor are cast separately and are of a peculiar, symmetrical, flanged construction. The bore is 4 inches by 4 inches stroke. Both cylinders and pistons are made of a special gray iron mixture, very hard, fine grained, and close, and without speck or blow hole. The construction of piston and rings is such that it prevents an excess of lubrication accumulating on top of piston, obviating the usual deposit of carbon, generally found on either air or water cooled motors.

The crank case is in two pieces, and are fine specimens of aluminum castings, with handhole plates, making bearings and connecting rods easily accessible to inspection.

The mechanically operated valves, located in the cylinder head, are interchangeable and made of nickel alloy.

The crank shaft is of generous proportions, made from high carbon steel, hammered, forged, rough-turned and ground to size. Phosphor bronze and nickel Babbitt bearings, of ample wearing surface, are found throughout the motor.

The commutator is placed in a vertical position, which is very accessible. Both primary and secondary wiring are incased in fibre tube.

Carburetor is thoroughly automatic, making starting almost instantaneous and fuel consumption very economical.

Lubrication is of the splash system, through the agency of a Hill Precision Oiler.

(In addition to the peculiar construction of the cylinders to facilitate air cooling, a 15-inch fan is used the six blades of which are made of sheet brass. It is carried on Hess-Bright ball bearings. The construction of this fan is theoretically and practically correct, the blast being concentrated directly on the cylinders. Running on a still day, the fan is unnecessary, the motor cooling entirely by the movement of the car. Some of these motors have been run 3500 miles, without an adjustment to the connecting rod or bearings being necessary.)

See the **Aerocar** at the Automobile Shows if possible, and let us give you a practical demonstration of its running merit.

Illustrated literature promptly supplied on request.

For 10 cents in stamps we will mail a beautiful gold-plated scarf pin.

The agent who will have the selling agency for the **Aerocar** will have a profitable business. If interested write us promptly.



The Aerocar Company, Detroit, Michigan

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Diamond

SIDE WIRE SOLID TIRES

EXCEL IN THIS TYPE.

THEIR RECORD IS A DIAMOND RECORD.

WHY TAKE A CHANCE?

Interesting Facts as to Weights and Sizes sent on request.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—304-306 N. Broad St.
BUFFALO—715 Main St.
DETROIT—158 Jefferson Ave.
ST. LOUIS—3966 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—328 Huron St.
SAN FRANCISCO—608 Mission St.
DENVER—322 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

POPE AUTOMOBILES

See our exhibits in
New York at Madison Square Garden only

POPE-WAVERLEY ELECTRICS

Great Variety of Up-to-Date Models.
$850 to $2,500
Pope Motor Car Co., Indianapolis, Ind.

POPE-TOLEDO TOURING CARS

20 H. P., Front Entrance, . Price $2,800
45 H. P., Side Entrance, . Price $6,000
35-40 H. P., Side Entrance, . Price $3,500
And a Complete Line of Other Models.
Pope Motor Car Co., Toledo, Ohio

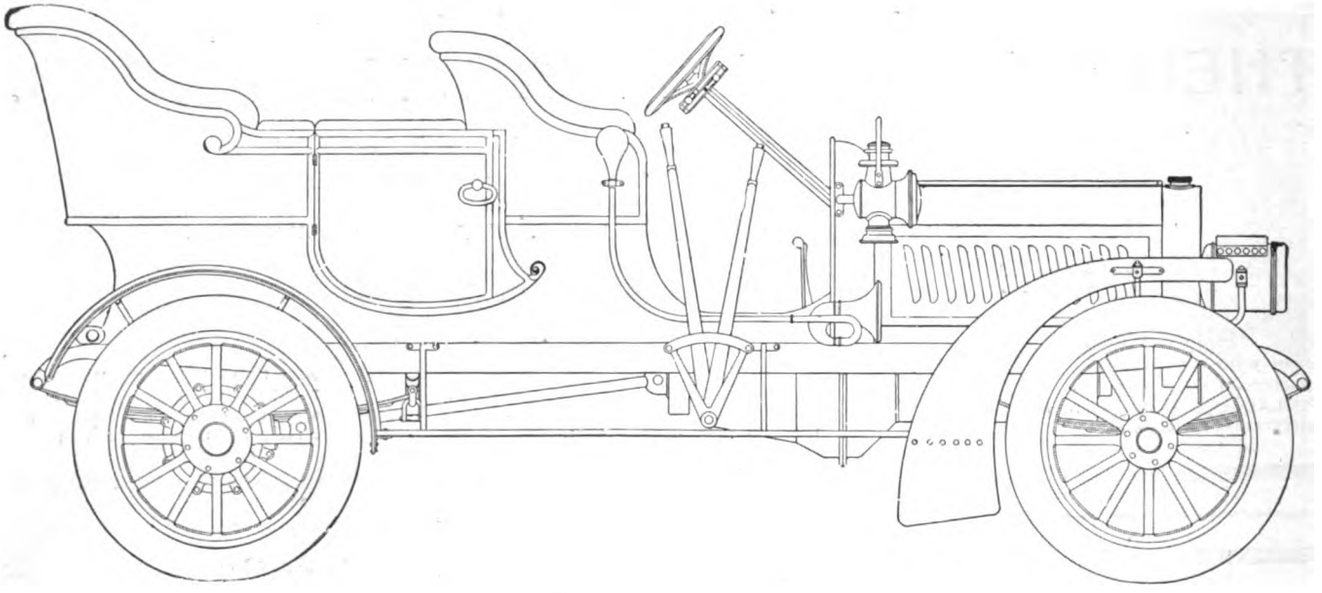
POPE-HARTFORD TOURING CARS

18 H. P., 2 Cylinder, . Price $1,600
20-25 H. P., 4 Cylinder, . Price, $2,500
Pope-Tribune, new model, Price $900
Pope Mfg. Co., Hartford, Conn.

Members A. L. A. M.

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ST. LOUIS
1906
"RIGS THAT RUN"



TYPE XVI
32-36 ACTUAL H. P.—$2500.

Every AUTOMOBILE, no matter what the PRICE, STYLE or CONSTRUCTION, contains some individuality which, in its builders' estimation places it above its competitors. Every manufacturer strives to have the best, and undoubtedly some one HAS THE BEST, but a fair verdict cannot be rendered by any one man. ONE exclusive feature does not constitute an entire MOTOR CAR no more than one individual constitutes a MILLION DOLLAR ORGANIZATION. An engine may be absolutely perfect, but if the power is not transmitted correctly to the rear wheels the car is a FAILURE, and vice-versa. To build a successful car, the manufacturer must give as much attention to the smallest details as the largest. THE ST. LOUIS MOTOR CAR COMPANY are the Pioneer Automobile Manufacturers of the UNITED STATES. FOURTEEN YEARS of BUILDING EXPERIENCE has taught us CONSIDERABLE. We know the material and style of construction best adapted for AMERICAN roads and CONDITIONS. We know how to manufacture intelligently and economically. WE KNOW that TYPE XVI is equal to any AUTOMOBILE built in America. Our claim is not based upon any ONE exclusive feature. It's "RIGHT" all the way. Compare our specifications with cars listing from $3000.00 up, then make arrangements for demonstration at any of the coming shows. We still have some valuable territory at our disposal and our AGENCY PROPOSITION is just as thorough as our car.

AGENTS who have already contracted for over two-thirds of our '06 product tell us that "TYPE XVI" will be the car of the year. We KNEW this four months back. If you are INTERESTED, it will be a pleasure to tell you WHY.

ENGINE. 32-36 ACTUAL H. P. 4 cylinder water cooled.
IGNITION. Jump spark. Spiltdorf coil. Pitsfield timer. Storage battery and dry cells.
TRANSMISSION. Sliding train. Three forward and reverse.
REAR AXLE. Floating type, bevel, Timkem roller bearings throughout.
FRONT AXLE. I section, drop forged, roller bearings.
FRAME. Cold rolled pressed steel, special stock, channel section, full pan in under hood covering entire engine.
WHEEL BASE. 110 inches.
WHEELS. Superior ouality; second growth hickory.
TIRES. 32 by 4 inches; optional.
VALVES. Mechanically operated; all interchangeable.
CARBURETTER. Float feed; automatic governor requiring no adjustment.
BRAKES. Transmission, foot and emergency lever, 5 in number.
BODY. Exceptionally roomy; will carry seven people; upholstering, general appearance and workmanship unsurpassed.
EQUIPMENT. Two brass side lights, one tail light, two head lights, full tool equipment, baggage haul, etc.
1906 CATALOG, GIVING FULL DETAILED DESCRIPTION, NOW REALY.

ST. LOUIS MOTOR CAR COMPANY, - Peoria, Ill.

SALES DEP'T: 1229 Michigan Ave,, Chicago, Ill.

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PARIS

VIQUEOT

NEW YORK

THE MODERN CAR.

Designed for those "who know." The majority of VIQUEOT buyers are those who have had extended experience with various foreign cars.

The VIQUEOT incorporates in its construction the latest and most approved French mechanical practices in a manner best calculated to withstand the hard usage on American roads.

We import the chassis only the purchaser exercising his own individual taste in the selection of body design.

28-32 H. P. **40-45 H. P.**

See us at the Armory Show.

THE VIQUEOT COMPANY

217 WEST 48th STREET, - - - NEW YORK CITY.

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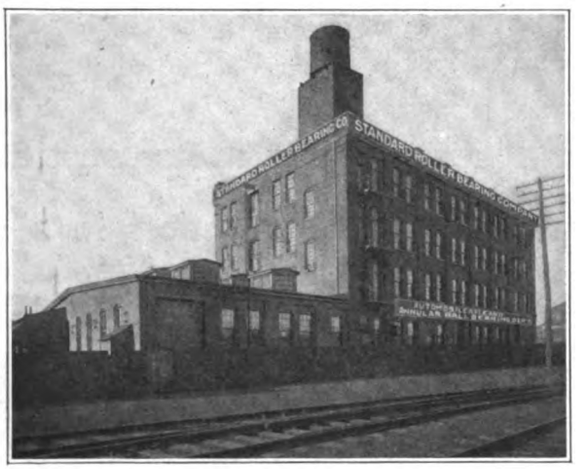









OUR PLANT AND PRODUCTS



Automobile Axle and Annular Ball Bearing Department



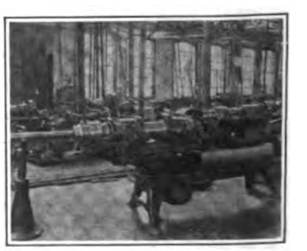

STANDARD ROLLER BEARING COMPANY

48th & Girard Avenue,
PHILADELPHIA, PA.

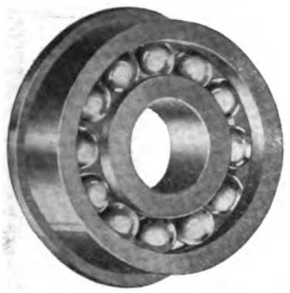
Send for New Catalogue.





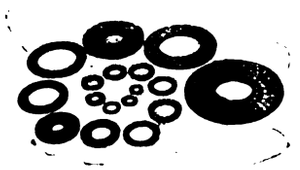
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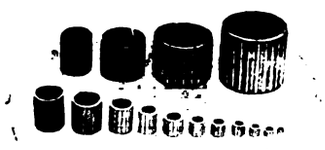
Flanged Annular Ball Bearing.



Grooved Ball Thrust.



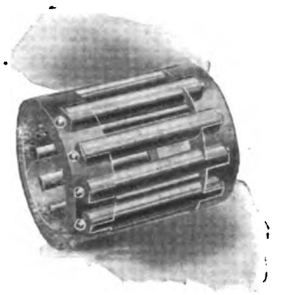
Ball Thrust Collars.



Journal Roller Bearings.



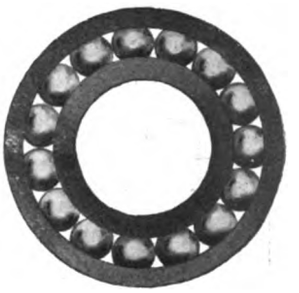
Rear Automobile Hubs.



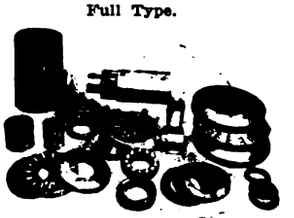
Journal Roller Bearing.



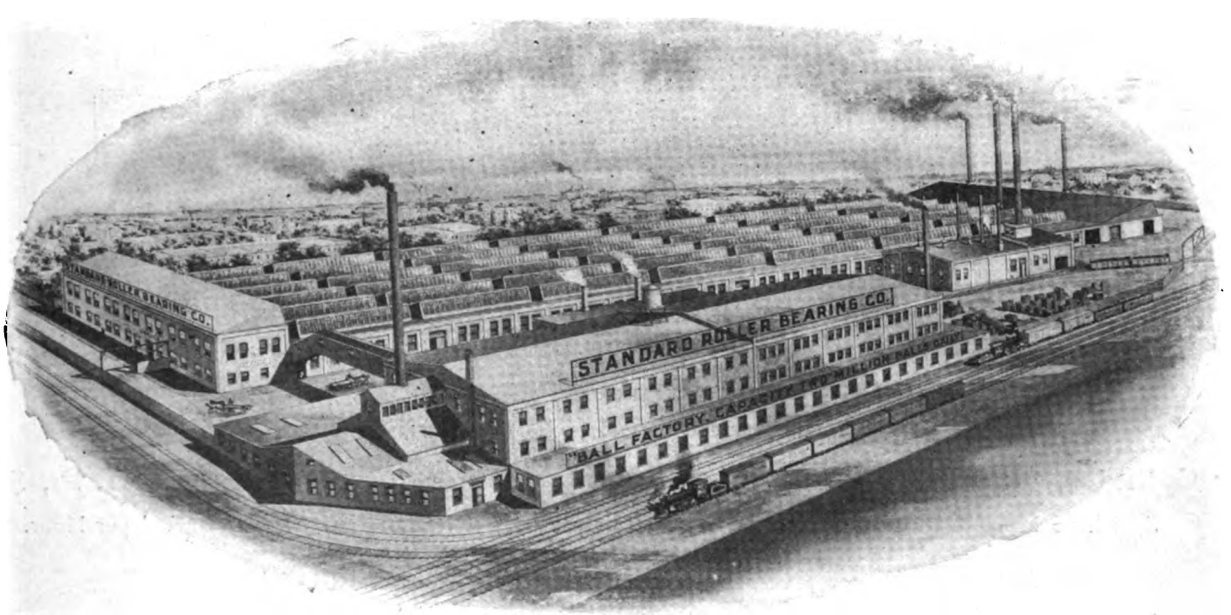
Plain Roller Thrust.



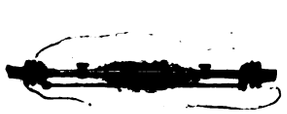
Annular Ball Bearing. Full Type.



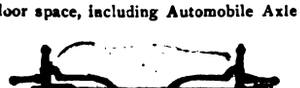
Miscellaneous Bearings.



Total Floor space, including Automobile Axle and Annular Ball Bearing Department, 175,000 square feet.



Front Axle.



Lemoine Axle.



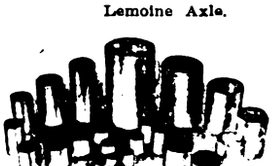
Bevel Gear Axle.



Chain Drive Axle.



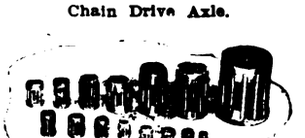
Roller Bearing Hangers.



Sleeves and Casings.



Ball Thrust Collar.



Journal Roller Bearings.



Annular Ball Bearing. Silent Type.



Roller Bearing with Casing and Sleeve.



Front and Rear Hubs.



Ball Retainer.

STANDARD ROLLER BEARING COMPANY

48th & Girard Avenue,

PHILADELPHIA, PA.

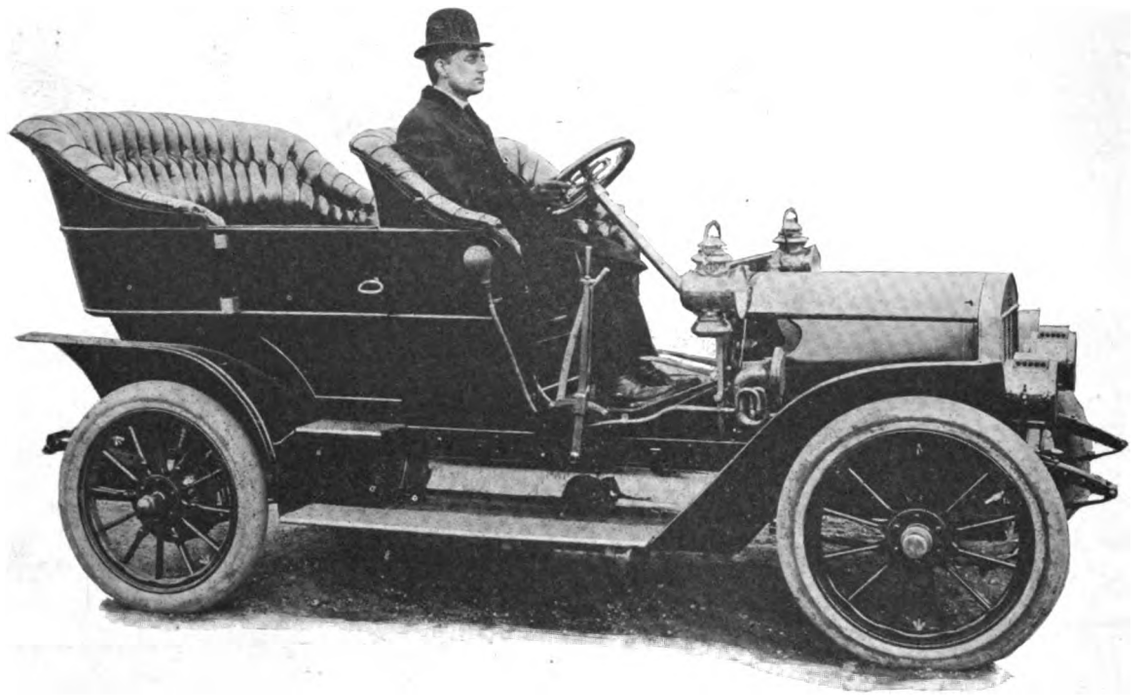
Send for New Catalogue.

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FRAYER=MILLER

The Car of Endurance and Speed.

THE ENGINE THAT IS COOLED THROUGH AIR JACKETS.



Four Cylinder, 25 H. P., $3,000.
Speed, 50 Miles per Hour.

Six Cylinder, 40 H. P., $4,000.
Speed, 60 Miles per Hour.

An American Product, an Imitation of No Foreign Car.

The system of cooling in the Frayer-Miller Car really MARKS AN EPOCH in automobile gas engineering. There is nothing to compare with the

FRAYER=MILLER AIR-COOLING SYSTEM, IT IS DISTINCTIVE.

A Frayer-Miller car covered more miles in one week than any other type of self-propelled vehicle.

The Frayer-Miller car at Long Branch was driven 3302 miles in 6 days, 15 hours and 29 minutes, equal to the **Distance from Golden Gate to Hell Gate.**

During the last 1,866 miles of this trip the engine never stopped.

Records for distance and for endurance.

The Frayer-Miller with its novel and striking air cooled system is **Up-to-date and Always Successful.**

The mud guard arrangement is novel and new.

EXHIBITING AT THE ARMORY SHOW, NEW YORK, AND AT CHICAGO COLISEUM.

OSCAR LEAR AUTOMOBILE CO., - - - Columbus Ohio.

FRAYER-MILLER MOTOR CAR CO., - Broadway and 65th Street, New York, N. Y.

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The manufacturer who equips his cars with Veeder odometers reaps a crop of mileage enthusiasts, who, in the face of the odometer readings, will make no unreasonable demands for replacements or free repairs.

THE VEEDER MFG. CO., Hartford, Conn.

Makers of Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

10,000 MILE TIRE—MICHELIN

King of all Pneumatics

FAMOUS THROUGHOUT THE WORLD

EXAMINE THEM AT

Space 145, Madison Square Garden, January 13th to 20th

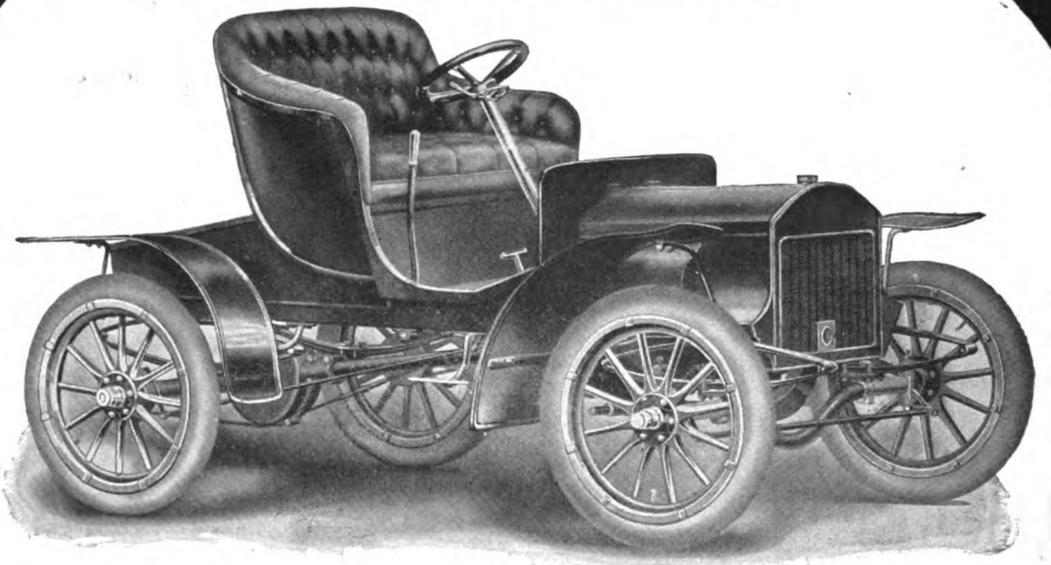
MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29th STREET, NEW YORK

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Wayne

ONE OF OUR 1906 MODELS



Wayne Model H—$800—Two-Passenger Runabout.

MOTOR, 2-cylinder opposed under hood. Cylinders, 4½ x 4, developing 14 H. P., water-cooled. TRANSMISSION, planetary gears, with DIRECT BEVEL GEAR DRIVE. Control is by a single lever, which engages the high speed clutch and reverse. The brake and slow speed are controlled by foot pedals. WHEELS, 28 x 3. EQUIPMENT, complete set of tools.

The strong features of this car are the extreme simplicity of the engine and transmission. The crank case and transmission case form one casting, and the entire engine can be taken apart or assembled in half an hour.

MODEL F, 4 cylinder car, cylinders 5½ x 5, 50 H. P. Seating 7 people.... Price, $3,500

MODEL K, 4 cylinder, 5 passenger touring car. 35 H. P. Sliding gear transmission ..... Price, $2,500

MODEL B, 4 cylinder, 5 passenger car, 24-28 H. P. Sliding gear transmission ..... Price, $2,000

MODEL C, 5 passenger car. Double opposed motor, 20 H. P. Planetary transmission ..... Price, $1,250

The Wayne Agent can supply a high grade car at any price his customer may demand.

We have the BEST— car for the customer.
proposition for the Agent.

New York and Chicago Shows, of course; 69th Regiment Armory, New York.

WAYNE AUTOMOBILE CO.

DETROIT, MICH.

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The Stearns

The Best Automobile

One Model 45 Horse Power

"The best automobile." Somehow it seems presumptuous to even think of claiming that; but we honestly believe that we make that car—and with good reason, as you shall see—so why not say it?

Furthermore, we can make **you** believe that very thing too, if you get close enough to our product and our ways of producing it.

We use the best materials from all parts of the world. We put 2100 hours' labor in finishing alone—10 months of working days—by American machinists, not "cheap labor."

We follow accepted practice in form, the design refined to the utmost of simplicity—not one bolt an "afterthought."

By what process could any maker anywhere produce a better car? Where is another so made?

After producing this car we figured the cost and selling price. We were pleased to find that the duties and excessive commissions on our only competitors, make our charge—$4,250—barely half the cost of any foreign car that makes a comparison possible.

We seek communication with those who will appreciate this car. For such it will give a service greater than any other mechanism the world has produced. Shall we send our book of details?

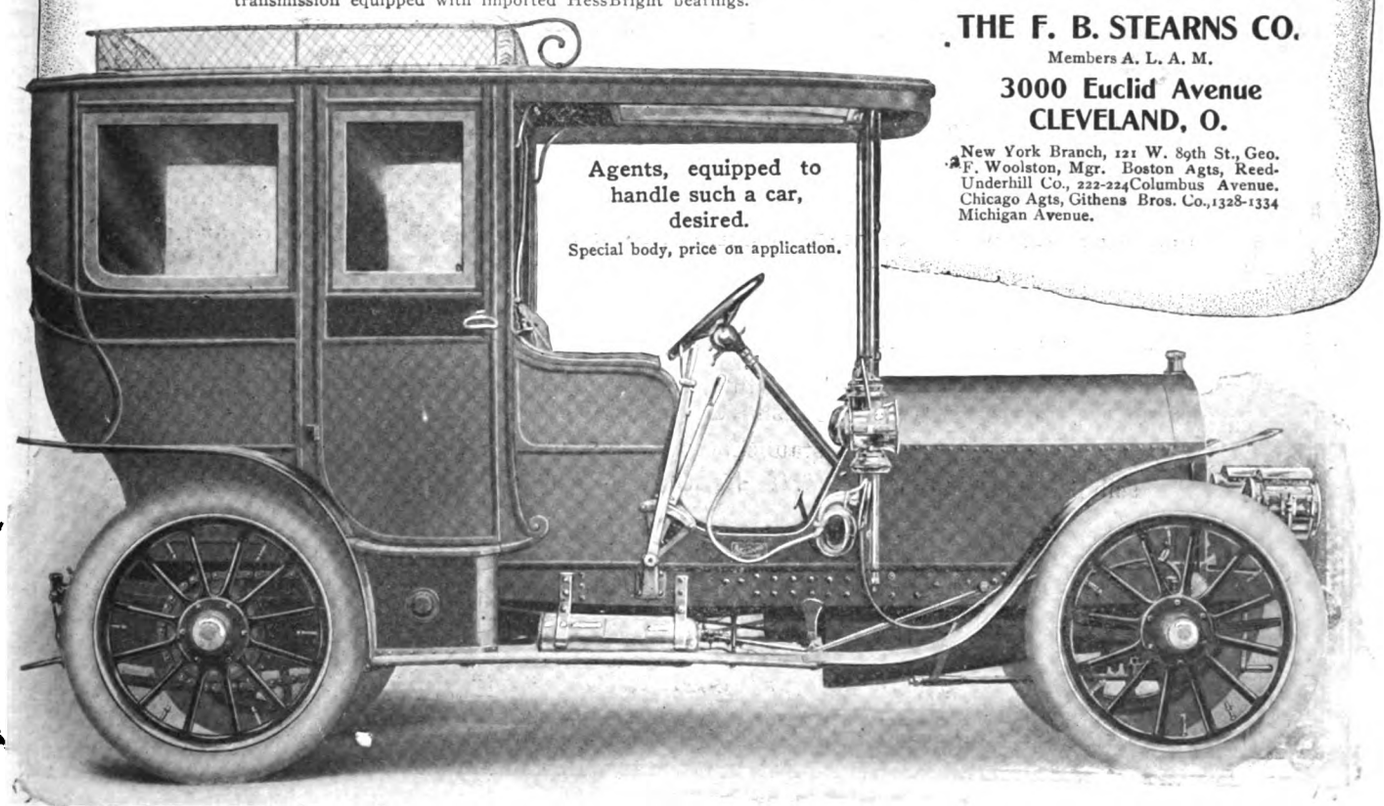
SPECIFICATIONS—40-45 h. p.; 4-cylinder motor, forward under hood; transmission, 4 speeds forward, one reverse, selective type; ignition, jump spark with magneto, batteries and coil; carburettor, double automatic; gears and shafts, special chrome nickel steel; crank shaft machined from solid billet; I-section axles, forged in one piece; frame, pressed steel; wheel base, 118 inches; double chain drive; transmission equipped with imported HessBright bearings.

THE F. B. STEARNS CO.
Members A. L. A. M.
3000 Euclid Avenue
CLEVELAND, O.

New York Branch, 121 W. 89th St., Geo. F. Woolston, Mgr. Boston Agts, Reed-Underhill Co., 222-224 Columbus Avenue. Chicago Agts, Githens Bros. Co., 1328-1334 Michigan Avenue.

Agents, equipped to handle such a car, desired.

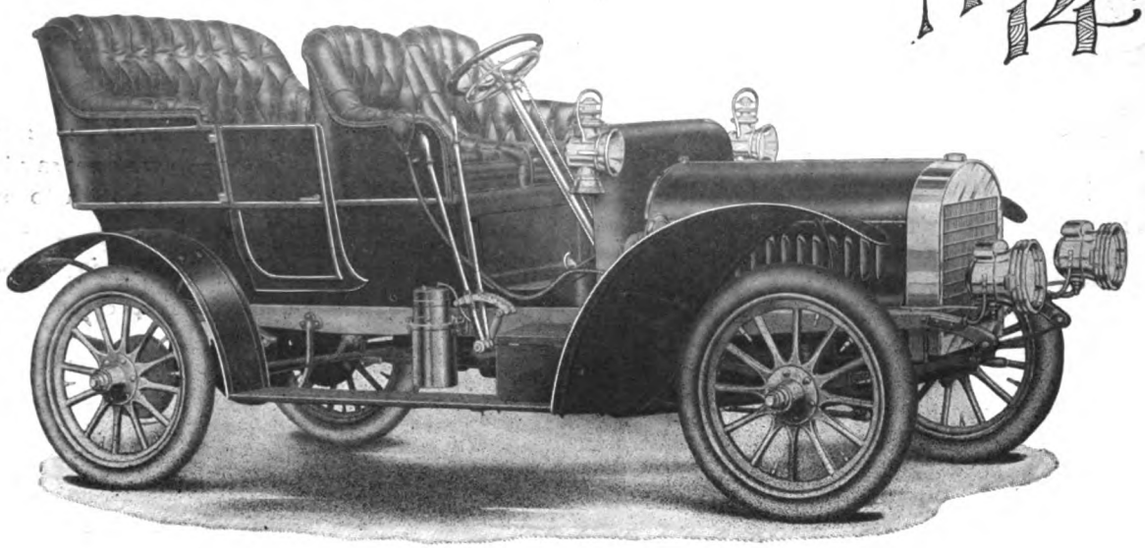
Special body, price on application.



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Rambler

Model 14



Positive action brings positive results.

The steady consistent efforts of the Rambler factory to produce a perfect car for the purposes of their various models have resulted in Model 14.

In this car is exemplified that staunchness of construction, simplicity of control and perfect accessibility that have been the features of the earlier models.

It is a medium weight five-passenger touring car, with a four-cylinder motor, 20-25 horse power, sliding gear transmission and shaft drive.

Every detail is strictly up to the minute, and an examination will convince you that it is easily the car of the year.

NEW YORK SHOW SPACE B-1

Thos. B. Jeffrey & Company

KENOSHA, WIS.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, January 18, 1906. No. 17

SHAKE-UP IN MICHELIN.

Sudden Change Effected in American Representation—How it was Brought About.

Internal friction in the Michelin Tire American Agency has brought about an unexpected change in the Michelin representation in this country. Henceforth that famous French tire is to be handled by the Michelin Products Selling Company, New York, which was incorporated this week, under the laws of the State of New York, with a capital of $100,000.

Of this new company, E. D. Winans, who occupied a like position with the American agency, will be the manager. It is not definitely known who are his colleagues. It is known, however, that the change was effected with startling suddenness. Both G. M. MacWilliam, representing the financial interests in the American Agency, and Winans journeyed to Paris to effect a renewal of the Michelin contract. Word first came that MacWilliam had been successful, and that Winans was down and out.

This report had scarcely grown lukewarm when cabled advices stated that Winans, who had remained in Paris after MasWilliam sailed for home, had secured the plum. Then quickly followed the incorporation of the Michelin Products Selling Company, and Winans arrived this week with evidence in his possession that it was he and the interests he represented that had acquired the prize sought.

Andrews Gets the Bliss.

Douglas Andrews, the New Yorker, who in three short months has made himself and the Berkshire car uncommonly well known to the trade and public, and who contracted for the entire output of Berkshire cars, made an even more surprising move late last week when he personally obtained control of the entire production of Bliss cars. For two years the E. W. Bliss Co., Brooklyn, N. Y., the big machinery and projectile manufacturers, have been working on the car, the "debut" of which was awaited with no small interest, due to the great size and importance of its manufacturers. It was known to be about ready for the market when Mr. Andrews unexpectedly stepped in and contracted for all of the cars that are in sight and thereby became their selling agent. The Bliss is a big, impressive four-cylinder machine resembling the best foreign creations, and its source leaves no doubt of its quality and workmanship.

May Make Continentals Here.

It is not improbable that arrangements shortly will be consummated for the manufacture of the Continental tire in this country. Willy Tishbein, representing the parent German company, is now in this country, and it is understood is negotiating to that end with a Massachusetts rubber company not at present identified with the tire industry. On the occasion of his last visit it is known that Mr. Tishbein endeavored to perfect arrangements of the sort with one of the largest tire manufacturers in Akron, Ohio, but they were too busy to undertake the work. If the present negotiations result favorably, it is stated that some marked changes will be effected in the personnel of the Continental Co.'s present American staff.

Buys the Matheson Output.

Hereafter the Matheson cars, and all matters pertaining to the sales and agencies thereof, will be handled by the Matheson Company of New York, which was incorporated this week with a capital of $100,000. This new company, in which the principals are Charles A. Singer of Manhattan and Henry U. Palmer of Brooklyn, N. Y., has purchased the entire output of the Matheson factory, and for the time being will locate at 1619 Broadway, New York City. It is the intention of this new selling company, however, to erect a commodious salesroom and garage in the upper part of the city which will involve an expenditure of approximately $50,000. Several sites are now under consideration and a definite selection will be made within the next week or two.

Mercedes Agency Changes Hands.

Smith & Mabley have lost the American agency for the Mercedes car. It has been taken over by the recently organized Mercedes Import Company, of New York.

WILL ISSUE SANCTIONS, TOO

Accessory Association Takes a Hand in Show Game—Post Again Made President.

H. Winfield Chapin, refusing re-election to the presidency of the Motor and Accessory Manufacturers, Inc., strong pressure was brought to bear on H. S. White, but he resisted it, and then, by a rightabout movement, the pressure was applied to D. J. Post, first president of the organization, and, as a result, he is again in the executive chair.

These presidential by-plays, and a strong declaration of show independence were the chief developments of the annual meeting of the Motor and Accessory Manufacturers, Inc., which occurred in Hotel Astor, New York, on Tuesday evening, 16th inst. It was a largely attended session fully one-half of the entire membership of 136 being present.

After the reports had been read and the election of officers consummated, the "declaration of independence," which had been hinted at in President Chapin's report, was promulgated. It took the form of the following resolution:

Resolved, That any member of the association exhibiting at any automobile or automobile parts or accessory show not sanctioned by directors of this association may be debarred from occupancy of space from any or all of these shows. This motion to become effective May 1st, 1906.

There was no disagreement as to the sense of the resolution. It made plain that the accessory manufacturers purpose being well and properly represented at all shows, or not being represented at all, whether the exhibitions be national or local in character, and whether they be organized by those in the trade or by those professional promoters who, seeing a "good thing," attempt to realize on it. The resolution strikes a hard blow at the show of the latter sort which certain Chicago men had incorporated as the Manufacturers and Automobile Parts Appliances and Accessory Exhibition, and which had been definitely set for September 27th to 29th next, at the First Regiment Armory in the Windy City.

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Several members of the Motor and Accessory Manufacturers had already engaged space at this projected exhibition and paid deposits to bind their engagements. How thoroughly the members of the organization are in accord, and how well they are pulling together, was shown by the disposition of these intending exhibitors. They let it be known that they would respect the resolution adopted to the extent of forfeiting their deposits.

The resolution is also in the nature of a warning to a couple of local show promoters who had proceeded on the belief that the exhibitors of accessories must be content with any locations that may be parceled out to them. It is the intention of the M. & A. M. to henceforth be a vital factor in all affairs dealing with shows of whatever nature.

Following the adoption of the resolution, sanctions were granted for the shows to be held in Buafflo, Detroit and Cleveland.

After Mr. Post, who is of the Veeder Manufacturing Company, Hartford, Conn., had been impressed as president, the other officers and directors were elected as follows:

First Vice-President, Howard E. Raymond, B. F. Goodrich Co., Akron, O.; Second Vice-President, H. S. White, Shelby Steel Tube Co., Pittsburg, Pa.; Third Vice-President, E. S. Fretz, Light Cycle & Mfg. Co., Pottstown, Pa.; Secretary, J. W. Gilson, Hartford Rubber Works Co., Hartford, Conn.; Treasurer, W. S. Gorton, Standard Welding Co., Cleveland, Ohio; and as Directors: H. Winfield Chapin, Brown-Lipe Gear Co., Syracuse, N. Y.; Clarence E. Whitney, Whitney Mfg. Co., Hartford, Conn.; P. S. Steenstrup, Hyatt Roller Bearing Co., Harrison, N. J.; C. S. Mott, Weston-Mott Co., Utica, N. Y.; F. E. Castle, Gray & Davis, Amesbury, Mass.; M. H. Moffitt, National Carbon Company, Cleveland, Ohio.

Two new applicants were elected to membership, viz.: The Hayes Manufacturing Company, of Detroit, Mich., and the Madison Lubricating Company, of Madison, Wis.

The report of Treasurer Gorton showed the organization to be in a strong financial condition. It has a balance on hand of more than $3,000, with all bills paid.

In his report, the retiring president, H. Winfield Chapin, outlined the work of the year. In the course of it Mr. Chapin said:

"The most important business of the Motor and Accessory Manufacturers during the past year that has required the attention of the Board of Directors has, of course, been the shows. We had hoped that during the present year we would be a partner in at least the New York show, to receive our share of the profits as an organization and to have a hand in the management; but the unfortunate conditions which resulted in rival New York shows upset our plans and we had to make the best of the situation.

"We contracted and called for approximately 11,600 square feet of show space at Madison Square Garden, 8,060 square feet at the 69th Regiment Armory, and 10,550 square feet at the Coliseum for our members, which would not have been possible without our organization. While this was assuming considerable financial responsibility, our members have taken all of the space contracted for, and the organization is now relieved of liability.

"In the conducting of future shows, whether they be for automobile manufacturers and partsmakers combined, or for parts makers only, I recommend that our Board of Directors continue to do so on the lines pursued heretofore, namely, to become proprietors of the shows, not merely exhibitors. We think all will agree that we are entitled to all the benefits arising from the part that we take in making the shows successful.

"The past year has been a most prosperous one. We have grown in number and in strength, very nearly doubling our membership, which is now 136, and have accomplished much of what we set out to do."

In the Retail World.

Frank A. Sanford is to re-enter the business in New York. He has taken the agency for the Austin car and will locate at 1843 Broadway.

J. H. Frenier & Son, Rutland, Vt., have broken ground for the erection of a garage and repair shop; the former will be 80 by 60 feet and the latter 40 by 60 feet.

L. R. Parker, of Aurora, has been made trustee of the bankrupt Monarch Automobile Co., Aurora, Ill. He has given bond in the sum of $40,000.

John Charter and Russell George, of Sterling, Ill., have formed a partnership under the firm name of Charter & George, and will conduct a garage and repair stop at that place.

The Atwood Garage Co., Toledo, Ohio, has leased a plot of ground at Collingwood and Bancroft streets, on which will be erected a one-story brick garage 100 to 200 feet. Building operations will not, however, be commenced until spring.

The Sidney B. Bowman Automobile Co. has leased the new building at 225-231 west Forty-ninth street, New York, but will not take possession until May 1st. Until then Bowman will occupy his present place on Forty-third street.

Grant Bros. Automobile Co. and W. F. V. Neuman will occupy two of three new stores comprising the new automobile building now being erected at Woodward and Alexandrine avenues, in Detroit. It is expected that the structure will be completed February 1st.

Curtiss & Tomlinson, Derby, Conn., carriage and automobile dealers, will separate their business on March 1st, when the automobile end of it will be operated as the Derby Automobile Co. They already have leased a new garage, 100 x 45 feet, recently erected on Seymour avenue, to which it will be removed.

The B. Webster Co. has incorporated in Detroit, Mich., to represent the Northern cars in that State. The company will be located at 251 Jefferson avenue.

The Ford is "taking" in South Jersey. Last week the Philadelphia branch placed two agencies, one with E. L. Lacy of Pitman, and the other with Hahn & Hahn, Bridgeton, N. J.

The Quaker City Automobile Co., of Philadelphia,, is making extensive improvements at its Broad street garage. To secure increased room for exhibition purposes the waiting rooms and lockers have been torn out and light wells are being installed to better illuminate the building.

The Elston Automobile Co., Indianapolis, Ind., has been dissolved, the head of it, S. W. Elston, having acquired an interest in the Indiana Automobile Co., and his partner, E. C. Vajen, having retired from the automobile business. The Indiana concern will have the State agency for the Oldsmobile and will also handle the Pope-Toledo, Cadillac, Knox, Autocar, Packard, Peerless, Winton and Franklin. The Fisher Automobile Co., which formerly had the Olds agency, is now representing the National and the Maxwell.

The Week's Incorporations.

Flint, Mich.—Auto Brass and Aluminum Co., certified to increase of capital from $25,000 to $75,000.

New York, N. Y.—Darracq Motor Car Co., under New York laws, with $100,000 capital. Directors—L. B. Chase, C. W. McCandless, Judson Hyatt, New York City.

Denver, Col.—Reo Automobile Co., under Colorado laws, with $10,000 capital. Corporators—Harrison B. Robinson, Lansford F. Butler, Milton J. Stair.

Glen Cove, N. Y.—The Hol-Tan Company, under New Yark laws; capital, $100,000. Directors—G. P. Tangeman, Brooklyn; E. R. Hollander, C. H. Tangeman, New York.

New York, N. Y.—Michelin Products Selling Company, under New York laws; capital, $100,000. Directors—W. F. Donovan, Brooklyn; P. W. Logan, F. P. Reilly, New York.

Huntington, N. Y.—The Matheson Company, of New York, under New York laws; capital, $100,000. Directors—H. U. Palmer, A. P. Palmer, Brooklyn; C. O. Singer, Larchmont.

New York, N. Y.—Universal Motor Car Company, under New York laws, with $500,000 capital. Directors—M. E. Hutchinson, F. E. Gunnison and Walter Moffatt, New York.

Monticello, N. Y.—American-European Automobile Touring Company, under New York laws; capital, $150,000. Directors—C. E. Wemple, New York; G. Y. MacTaggart, H. A. Taylor, Brooklyn.

Lenover, Pa.—Chalfant Motor Car Co., under Pennsylvania laws, with $50,000 capital. Directors—Harry Chalfant, Horace S. Boyd, M. F. Chalfant, W. C. Minchener, W. Howard Chalfant.

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DUTCH PANELING AT CHICAGO

This Form of Decoration to Make Western Show Handsome—Other Details.

All is to be harmonious at Chicago, too. While it is not known whether a negro lady or a "boy wonder" will warble in the same old way, it is known that the beautifying touch is to be laid on with generous hand and that no longer will the big Coliseum look like a crazy quilt of bunting. It was announced long ago that a uniform plan of decoration would be followed, but it was not until late last week that it was made known just what manner of decoration would be employed. It was then given out that hardly a square foot of the falls or ceiling of either the Coliseum of the First Regiment Armory, where the overflow will be housed, will be visible. The walls are to be covered, upstairs and down, to a height of ten feet, with a scheme of Dutch paneling, the woodwork being of Flemish oak and the background of green and old gold. At the top of this there will be a cornice of staff work representing various automobile designs and bearing groups of opal incandescent globes. The decoration which covers the roof will extend under the galleries and along the walls to meet the top of this paneling.

A great deal of staff work is to be used in the signs and the pillars which support them. The latter will vary from eight to twelve inches in diameter and will run to a height of eleven feet, there supporting the sign proper, which will be fifteen inches wide, of black and gold. Suspended from this sign will be a shirred satin drapery three feet in depth, and in front of this, suspended by chains of old English design, will be a row of shields, each shield bearing a letter, the combination of shields forming the name of the car exhibited in that particular space. The drapery will be of old gold and the shields will be deep blue with gold trimmings. The letters will be of enamel and raised one-half inch. At the top of the sign there will be staff work of suitable design fifteen inches wide and above this again groups of three and five electrically lighted globes, twelve and sixteen inches in diameter, supported by arms which will also be of staff. This work, over all, will be nearly eight feet in width and "is expected to eclipse anything of the kind ever attempted at a show of this character."

Not a pillar or obstruction will be visible in eight of the buildings. The pillars of the Coliseum spring directly from the floor and have long been a source of worry to exhibitors. This year they will be included in the panelling and lighting scheme, as described, so that exhibitors under the Coliseum gallery will be practically enclosed in their private rooms, the front side only being open.

"Extraordinary lighting effects have also been arranged for in those particular spaces, the Chicago Edison Company having provided a set of magnificent fixtures of extraordinary brilliancy which have never before been shown to the public," is the way the official announcement reads. In addition, a powerful searchlight will be mounted on the Coliseum which will sweep Michigan avenue "for miles"—presumably for Manager Miles—and permit of demonstrations at night.

The American Automobile Association has secured a rate of a fare and a third on the certificate plan from the Central, Trunk and New England associations, and Secretary Batchelder reports that the same concession is expected from the Western, Southeastern and Southwestern associations. The railroad agents, with the secretaries of the two automobile associations, will have offices on the first balcony of the First Regiment Armory.

Ford Fixes Price and Selects Tires.

The Ford Motor Co. finally has set at rest all doubts as to the price of their new four-cylinder runabout. It has been definitely listed at $500.

What is almost as interesting, and in its way as sensational, as the car itself is the fact that the new Firestone mechanically fastened tire is to be the standard equipment. The deal with the Firestone people was consummated this week.

Winton to Build in New York.

The Winton Motor Carriage Co. is the most recent of the New York branches to prepare to cross the circle—Columbus Circle, that dividing line between upper and lower Broadway. They have leased for a period of sixty-nine years a site at Broadway and Seventieth street, on which a palatial fire-proof four-story salesroom and garage, having 84,000 square feet of floor space, will be erected.

Goodyear Moves in Chicago.

The Goodyear Tire and Rubber Company, which has just taken possession of a large, new brownstone Broadway building in New York, has also "blossomed out" in Chicago. There the Goodyear branch has been removed from Lake street to 80-82 Michigan avenue, a big, six-story structure, a part of which will be occupied by the Beckley-Ralston Company, jobbers.

Birdsall out of Decauville.

E. T. Birdsall, manager of the Decauville Automobile Co., New York, has severed connection with that concern and has practically completed arrangements to go into business on his own account. He has invented a six-cylinder motor which he purposes placing on the market.

Ludington to Superintend G & J.

George Ludington, an old and experienced rubber man, has been appointed superintendent of the G. & J. tire factory at Indianapolis.

NO NEW OFFICERS FOR N.A.A.M.

Old Ones all Reelected and Thomas only New Director—Treasury Bulging.

During 1906 the National Association of Automobile Manufacturers will be officered exactly as it was officered during 1905. That is to say, at the annual meeting, held in the Victoria Hotel in New York on the 17th inst., all of the old officers were re-elected as follows: E. R. Cutler, Knox Automobile Co., president; George W. Bennett, Thomas B. Jeffery & Co., first vice-president; Albert L. Pope, Pope Mfg. Co., second vice-president; S. D. Waldon, Packard Motor Car Co., third vice-president; W. R. Innes, Studebaker Bros. Mfg. Co., treasurer, and Percy Owen of the Winton Motor Carriage Co., secretary.

Preceding the election of officers all the directors save Marcus I. Brock, were re-elected for the term of three years. They are as follows: Windsor T. White, White Sewing machine Co.; C. C. Hildebrand, J. Stevens Arms and Tool Co., and R. D. Chapin, Olds Motor Works. Mr. Brock, who leaves the service of the Autocar Co. this week, to take up the assistant management of the Association of Licensed Automobile Manufacturers, was succeeded by E. R. Thomas, of Buffalo.

Aside from the transaction of routine business, which included the reading of the treasurer's annual report showing a snug nest egg of more than $30,000 on hand, the election of officers was the only thing of moment before the meeting.

First American Annunciator.

Joseph W. Jones, the New York manufacturer of the well known speedometer that bears his name, has added the Jones Auto-Annunciator to his list of inventions and productions—the first American instrument of the sort. It is designed for communicating instructions to the driver of a car by the push-button method. The plate, which is fixed on the dashboard in plain sight of the driver, is lettered: Start, Stop, Fast, Slow, Left, Right, Home, Club. Pressure of a button inside the car rings a bell and also illuminates a particular signal.

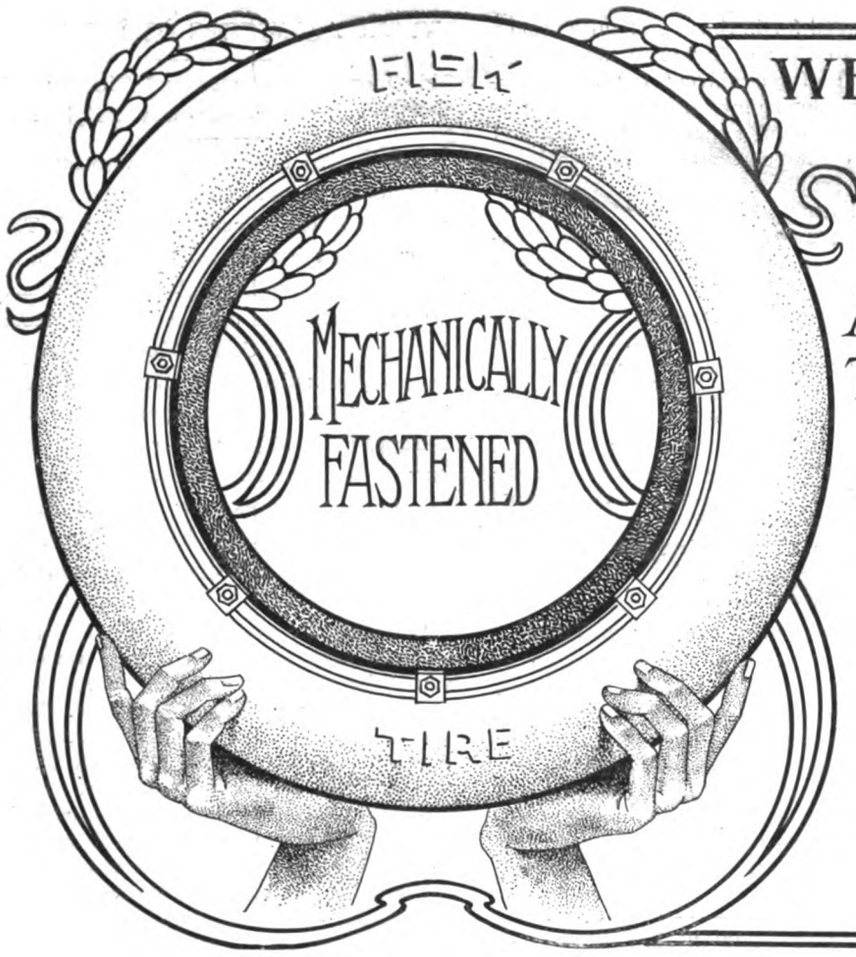
Minich out, Fanning in.

V. E. Minich, sales manager of the Haynes Automobile Company, Kokomo, Ind., has resigned that office to engage with the National Cash Register Company. He will be succeeded by Frank J. Fanning, formerly manager of the Electric Vehicle Company's Chicago branch.

Conwell Joins Marion Staff.

J. S. Conwell has been appointed general manager of the Marion factory at Indianapolis, Ind. Conwell "knows his book," having served for several years as manager of the Waverly plant.

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AS A MODEL OF TIRE PERFECTION.

DESIGNED
VERY DIFFERENTLY from OTHER TIRES
(FOR SAFETY AND COMFORT),
and constructed a little more carefully (for DURABILITY), they have survived the attacks of many erstwhile competitors, continuing to prove their real worth, and pleasing those who used them, until to-day they are universally acclaimed

THE IDEAL TIRES FOR PLEASURE, and THE MOST PRACTICAL FOR ENDURANCE AND ECONOMY.

It is perhaps possible to make as good tires as the FISK, but we do not know of any who is doing so at present.

Let us send you some Tire Literature,

THE FISK RUBBER CO., Chicopee Falls, Mass.

1906

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CADILLAC 10 H. P. Runabout,	$750 CADILLAC
CADILLAC 10 H. P. Touring Car,	950 CADILLAC
CADILLAC 10 H. P. Folding Tonneau Car,	1,000 CADILLAC
CADILLAC 10 H. P. Coupé,	1,200 CADILLAC
CADILLAC 30 H. P. Runabout,	2,400 CADILLAC
CADILLAC 30 H. P. Touring Car,	2,500 CADILLAC
CADILLAC 30 H. P. Coupé,	3,000 CADILLAC
CADILLAC 40 H. P. Touring Car,	3,750 CADILLAC
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The largest manufacturers of Motor Cars in the World.

Members of Association Licensed Automobile Manufacturers.

We will exhibit in New York at Madison Square Garden only and in Chicago at the Coliseum.

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THE MOTOR WORLD

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NEW YORK JANUARY 18, 1906.

Extent of the Independence.

If the forecasts of the shows left any doubt that the best American manufacturers have drawn fully abreast of the best foreign manufacturers, the shows themselves have thoroughly dispelled it. They amply prove that the year 1906 is exactly what the Motor World of last week styled it, i. e., "The Year of American Independence."

Freely granting that car designs the world over follow the same general lines and that those lines first were cast abroad and then taken up here, is to say all that fairly may be said. If Europe sets a good fashion America is not usually slow to follow it and improve on it, and this is exactly the case with motor cars. The Americans—the best American makers have learned their lesson thoroughly and well and no longer have reason to fear the rod or the once superior knowledge of their teachers. They now "know their book" and are adding a few pages of their own authorship. If they have assimilated many European ideas, the American manufacturers are not producing slavish copies. Their cars contain a deal of their own ingenuity, much of which in due course Europe will duly "assimilate." It is so in nearly all other lines of mechanical manufacture. It would be odd, indeed, if it did not prove the case in this instance.

It is a striking and significant fact that that good old libel, "America is just about five years behind France," has not been heard once on the occassion of the present shows. Two years ago it was rampant and last year it was not entirely absent. To-day not a lip gives utterance to it. It is stilled forevermore. America is no longer behind any other nation. The cars on exhibition prove it, and have put the old libel to rout.

The best American cars will "hold their own" with any in the world.

The Most Impressive Development.

If there be any one striking development revealed by the annual staging of America's automobile productions it must be considered that this one has to do rather with the supports of the car—the wheels and tires more than to any one feature of the mechanism. This may come somewhat in the nature of a surprise to many, for there are doubtless those who have not given the subject a thought, nor proved keen enough observers to see it for themselves.

But a few years since, 30-inch wheels and three-inch tires were considered standards on the great majority of medium weight cars built in this country with thirty-two inches and a half inch larger tire as a maximum that was not thought necessary by many. At the opening of last year this former maximum had come into general use; it had, in fact, been transformed into a minimum, with thirty-four inches as the top notch. With the latter came the more general use of the four-inch tire and nothing so strikingly illustrates the progress made during the past twelvemonth as the prevalence of this size on cars of the same weight that formerly employed the thirty and thirty-two by three inch standards. More significant than this is the number that have blossomed forth with thirty-six inch wheels and four and a half inch tires, of which more than a baker's dozen can be found at the shows.

This item of bigger wheels and bigger tires may appear on the face of it to mean but little; to be of comparatively insignificant import as compared, for instance, with an improvement in the motor or other part of the mechanism. But its importance is far reaching; it is but a step that makes for the routing of the pessimist and for silencing, or at least greatly reducing, the wail that more than any other thing has served to injure or confine the industry to too-restricted bounds—the wail about tire trouble and the cost of tire maintenance.

The tire makers have dinned this into the ears of the tire user first, last and all the time, and without wishing to claim an undue amount of credit for the result that is beginning to appear, the Motor World has dwelt upon it both persistently and consistently. It is not difficult to understand why this should be so. It is a matter of common knowledge that the smaller the wheel the more difficult and uncomfortable must be the travel over an uneven surface. The small diameter necessarily causes a sharp rise in its circumference from the point of contact on the ground, which is very small, and it must, accordingly, rise more abruptly at obstructions that would be rolled over easily by a larger wheel and drop into every depression no matter how small, that would be bridged by the latter. Increasing the diameter of the wheel naturally enlarges the amount of surface in contact with the road and in the same proportion reduces the amount of wear to which any given part of the wheel rim, or in this case the pneumatic tire, will be subject.

In the case of the pneumatic tire there are other equally strong reasons, chief among which is the greatly increased volume of air permissible which in turn conduces to a proportionately increased degree of resilience in the tire as a whole. It is yielding that saves the tire; resting that wears it out. The more it yields to the obstructions placed in its path the longer will be its life. provided that resilience is not obtained at the expense of something else.

This use of thirty-four and thirty-six inch wheels where formerly thirty and thirty-two were standard, and four or four and a half inch tires instead of three and three and a half, places the American maker of pneumatic tires on a par with his foreign competitor for the first time. Larger wheels and larger tires have been a feature of Continental practice from the first; the tire manufacturer has never seen fit to skimp the diameter of either the car's wheels or its tires, and the result has been manifest in the great advantage obtained. It is a step in the right direction which in the next few years is bound to sweep away a very large part of the everlasting complaint that is now so general regarding the

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pneumatic and result in vastly greater satisfaction to both maker and user. It has been a long time coming and its advent has been unheralded and unnoticed, but it is here none the less, here and here to stay, and with the impressive strengthening and improvement of brakes and increase of safety devices that the shows have brought to the surface, the prospective purchaser, who is timid of purse or person, will no longer have cause to hold aloof.

Lengthening of Wheel Bases.

Multitudinous and dire were the predictions made but twelve months ago as to what was bound to happen when the cars of then unprecedented wheel base were put to a practical test under touring conditions. Sagged, twisted and utterly disrupted frames constitute but a few of the unpleasant results that the wise ones foresaw as coming to the man who had the temerity to drive one of these monsters of 106 or 108 inch wheel base over the average American road. The metal that would endure the violent twisting and surging strains and at the same time bear the weight of a heavy body and passengers had not been created, they said, and what was more, there was little prospect of ever obtaining such steel.

How great the advance has been in this direction may be appreciated most fully by quoting from a commentary in the Motor World on the then approaching show published in the first week of January, 1905. It is there said that "in looking over the leading 1905 models the observer will notice a number of cars having wheel bases of 100 inches or more. When it is recalled that only a year or two ago such bases as 60 and 70 inches were considered fairly long, and that only a short time before the dummy runabouts of unlamented memory were the vogue, the tremendous change that has been made will be apparent.

"It is easy to see that these long wheel bases increase the car's liability to give trouble. This is, of course, well known to designers and builders and they take what they deem to be sufficient precaution against sagging, twisting and buckling frames. It can be determined only by actual use whether they have done enough. They have to build well and provide against the severest strains and stresses, and each time the frame is lengthened the problem of giving it strength to support the engine and transmission becomes increasingly difficult. Whether it has been solved in all cases only the future can disclose.

And this reflected the generally prevailing opinion of the time; the great lengthening of wheel bases was regarded with many head shakings and doubts. What has come to pass in the interim is so much a matter of common knowledge as not to call for comment. The past year's experience has fully disclosed that while there is always room for improvement no error was committed in lengthening the wheel base. It has shown this so conclusively that now wheel bases of 120 inches or over call forth no remark. While the drawing out process has not reached its limit by any means, it is, however, noticeable that now increased wheel base does not mean a longer frame owing to the expedients resorted to of placing the springs off center. Now, nothing but the light runabout falls below the 100-inch mark, and even these small, low-priced cars are approaching it.

Wherein Some Testers Fail.

What is life without a hobby? Whether it be chickens or postage stamps, old paintings or cigar bands, it would seem that human nature runs more or less to hobbies. The automobile owner naturally could not in reason be expected to enjoy any immunity from the ubiquitous germ that takes such endlessly varying propensities to itself according to the temperament of the individual in which it finds lodgement, but the man who is employed to test cars should certainly not be subject to the malady, and therein lies a plaint of the manufacturers.

That considerable time is required on the part of a new entrant to gain the experience necessary to become of value to the maker of a car hardly need be referred to and this regardless of his qualifications, for the tester must know his car from the ground up. General knowledge of the automobile and the theories of its motor are, of course, the best foundation upon which to build, but without actual experience with the car upon which he is to work the tester would be of small value to his employer and this experience he must get at the latter's expense.

Once having attained that degree of proficiency that establishes his value, the tester should be in a position to take up his task with a mind entirely free from prejudice. Unfortunately this does not happen to be the case and the manufacturer who has carefully schooled and watched over the welfare and progress of some promising candidate for the testing crew feels aggrieved when the latter, once in that coveted position, develops a new hobby that renders him blind to all other possible sources of trouble. As an example of this, a complaining manufacturer cites the instance of several of the members of his testing crew who have only been elevated to that post after long experience, but once there have developed tendencies that greatly impair their value. In other words, they cannot be impartial and look over the car with an eye single to the location of any defect, whatever it may prove to be. One of them would never attribute the cause of a breakdown to any other source than the carburetter. Regardless of what might have happened to bring about the involuntary stop, this individual could conceive of no other cause than the carburetter and was wont to take that essential to pieces upon very slight provocation.

In another instance, the hobby took the form of valves and the victim of its wiles is credited with having ground in valves oftener on one car than has ever been recorded previously since such things came into existence. Anything from the loss of power occasioned by absent mindedly leaving the brake on lightly to an absolute stop was by him attributed to the valves, and so it goes. Others became afflicted with a leaning toward the ignition or some of its component parts and could see nothing but the fault of a battery or coil as the root of the trouble. Unfortunately the disease does not fully develop until too late.

Regardless of whatever conflicts or consideration, it was a fortunate circumstanc that the shows were this year housed in two separate buildings. In the light of to-day it is plain that neither building would have held much more than half of the cars it was desired to exhibit, and that great embarrassment must have resulted.

Enclosed please find $2 to renew my subscription to the Motor World, from the issue of December 28th. I do not feel that I can spare a single copy of the paper, as I derive a great deal of information necessary to the successful operation of my car; so please see that there is no break in my file."
—A. G. Seaman.

Some farmers at least are growing wise. The National Grange of the Patrons of Husbandry has duly resolved that the motor car is "an innovation in modes of travel which must be accepted."

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GATHERING ON THE BEACH

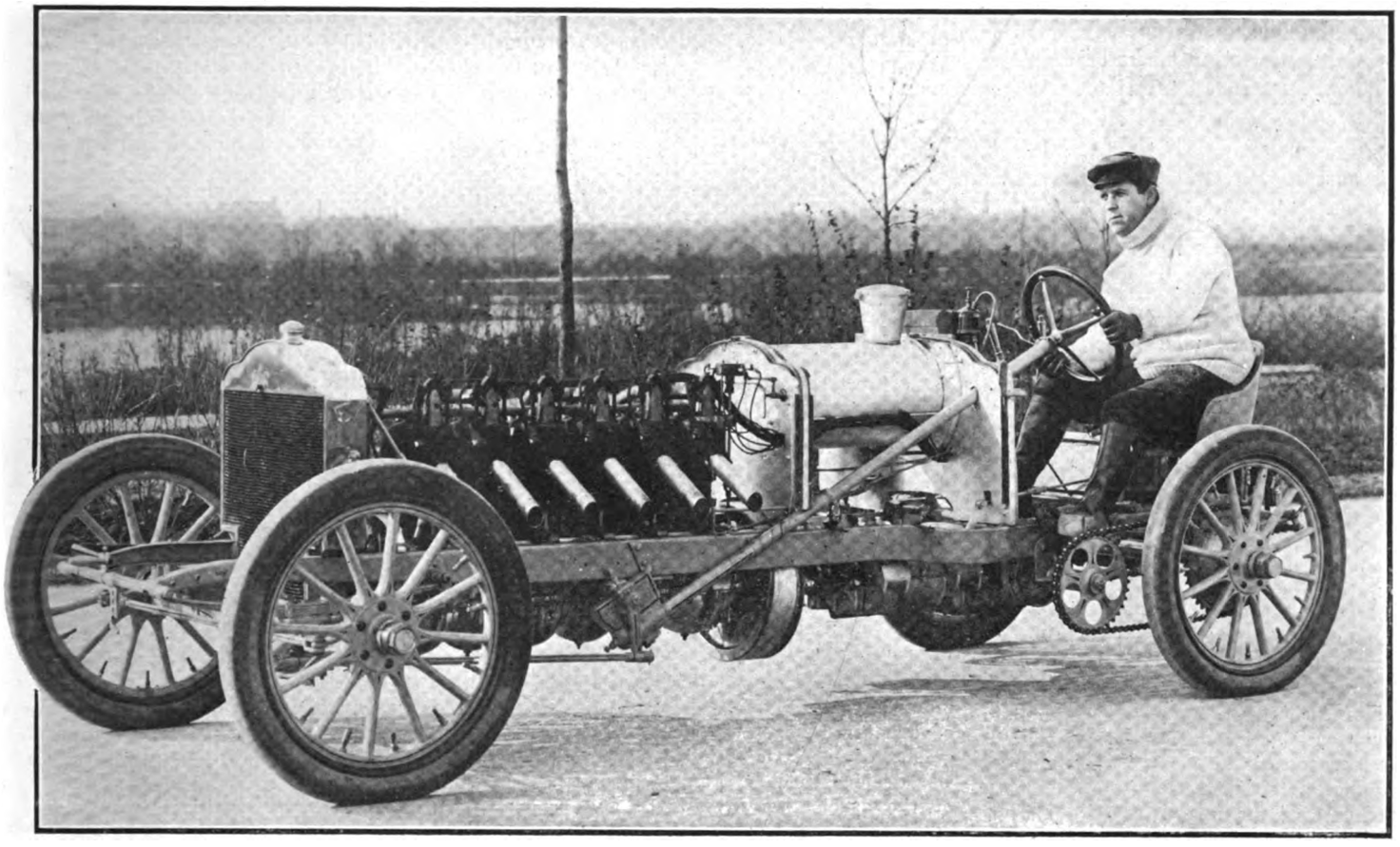
Eight Racers Already in Florida—Wreck Comes Ashore but will be Dynamited.

Daytona, Fla., Jan. 15.—Only seven or eight of the important racers have thus far put in an appearance for tuning up on the Ormond-Daytona beach, owing to various delays, but the prospects for a successful carnival of speed never have been so bright a week ahead of the gathering. The beach is in tiptop shape, if one does not venture north of the turn to the Ormond station, where treacherous quicksand has always prevailed. Joe Downey, chauffeur for J. R. Harding, of Boston, H. W. Fletcher and others within two or three days have located this quicksand to their sorrow, Downey being obliged to work a good share of one night to extricate the 70 h. p. Panhard in which he was caught. But for a low tide that lessened the suction he might be laboring there still. A big piece of wreckage that came ashore a few weeks ago is to be blown up by dynamite tomorrow, which will leave the course free from obstructions.

A small stand is about finished close to the elevated platform extending from the Florida East Coast Automobile Club's house near the South Bridge road. At the front of this stand will be about twenty private boxes, and at the rear six or eight rows of ascending seats—bleachers, in fact. The capacity of the stand is about 500 persons. The Ormond and Daytona contingents have wisely concluded that their salvation lies in pulling together, and so great care is being taken to balance the power between the two places. The preliminaries have been running far smoother than last year, and with favorable winds and tides any upset seems remote. The Clarendon Hotel, a mile and a half north of Daytona, has a garage this year, making three large establishments of that sort accessible here, but there is business enough for all, with several minor shelters brought into requisition.

The racers on the ground to date are F. E. Stanley's steamer, the successor to the teakettle that Louis S. Ross piloted so well last season; Stanley's Model H; Clifford Earp's 90 h. p. Napier; Emanuel Cedrino, with the 120 h. p. Fiat; H. W. Fletcher, with a racer of the same make and power; J. R. Harding's 90 h. p. Mercedes and Walter Christie's racer. None of the cars have been here a week yet, and no determined tilts against time have been made. There has been greater privacy than ever over performances, but it is widely understood that Fletcher and Cedrino, who were the earliest comers, have been going "great guns." Fletcher's friends are afraid, however, that he will not let well enough alone, and so seek to readjust his Fiat that his "going" at the proper moment may not be so impressive. Earp's Napier, too, has been hitting a fast clip, but Alexander McDonald's absence is noticeable. Harding's Mercedes has not yet given an account of itself.

Of Stanley's Model H, although wonderful speed is claimed for it, little need be said, as it was brought here mainly to test its relative power against the teakettle's successor. The latter, judging from its first spin to-day, seems to have almost no speed limit, running with surprising ease and being handled with exceptional quickness. Only an accident can keep it from cutting a big figure in next week's contest. Stanley, who is a hard headed, practical man of scientific bent, has unbounded confidence in his latest production, which has previously been tried only on a couple of steep hills near Boston. Empty it weighs 1,650 pounds, against 1,750 for Ross's teakettle. Filled, the difference is about the same, the new car tipping the beam at 2,100 pounds. It has only one engine, while the teakettle had two, but this one can develop almost twice as much power, and, further, can make 50 miles without replenishing the tanks. The shell is of cedar, covered with canvas and painted dark red, so that spectators will not be dazzled as by the tin teakettle. Lift the cover off and reverse it and it makes the two perfect halves of a canoe. The thin boilers are reinforced by being wound with piano wire, which, while only one-twentieth of an inch in diameter, enable a pressure of 800 pounds to the square inch to be safely sustained.



C. A. COEY, OF CHICAGO, IN THE SIX-CYLINDER THOMAS, WHICH HE WILL DRIVE IN THE FLORIDA SPEED CARNIVAL.

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A. A. A. BUSY ALL WEEK.

Four Meetings in Three Days—Resolutions Passed Favoring Private Speedways.

The "big-wigs" of the American Automobile Association had a busy week during show time. At the armory, where the "removal" show of the Automobile Club of America is holding forth, various committee meetings were held, starting on Monday afternoon with a meeting of the racing board and ending on Wednesday, when an open meeting for all members occurred.

William K. Vanderbilt presided at the meeting of the racing board Monday afternoon, the chairman, Robert Lee Morrell, being absent. No business of importance was transacted. The racing board voted to recommend to the A. A. A. board of directors that recognition be given to the International Automobile Racing Association of Havana, Cuba, which will hold its second annual carnival next month. E. R. Thomas, George Isham Scott, R. L. Lippitt, A. L. Riker, J. L. Breese, A. G. Batchelder and A. R. Pardington were in attendance.

Discussion of the good roads question was, in the main, the subject of discussion at the meeting of the directors of the New York State Automobile Association Tuesday afternoon. A sentiment was shown in favor of co-operating with other users of the highways in contributing an annual tax for maintenance of highways built by State aid. The following resolution was unanimously adopted: "Resolved, That it is the sense of the New York State Automobile Association that such association should favor a reasonable provision of law looking to the motorists of the State paying a share of the cost of the maintenance of all improved highways built by State aid, provided such maintenance is made by the State." The reports of officers and chairmen of committees showed the association to be in a porsperous condition. The total membership of the State division is about 2,500 and comprises fifteen clubs. The New York Motor Club of New York City was admitted to membership.

At the conclusion of the meeting of the board of directors Tuesday afternoon, they were entertained at luncheon by Emerson P. Brooks. This was because the board put itself on record as opposing road racing except upon specially constructed tracks. Emerson Brooks and his associates are and have been for a twelvemonth projecting a speedway in New Jersey. This resolution bearing upon the subject was passed: "Resolved, That it is the sense of the board of directors of the American Automobile Association that a special speedway for automobile racing and the testing of cars has become a necessity, and that this board encourages the construction of such speedways throughout the country." A nominating committee, consisting of Elliott C. Lee, Walter T. White and A. R. Pardington was named to nominate a ticket for the annual election to take place in Chicago next month. The affairs of the association are in a prosperous condition, the treasurer's report showing a balance of $4,520. There are 62 affiliated clubs, with a total membership of over

Winthrop E. Scarritt, former president of the American Automobile Association, was the principal speaker at the open meeting of that association, held in the armory Wednesday afternoon. After touching at length upon his pet subject—legislation—Mr. Scarritt spoke of the decreasing supply of gasolene. "There are in use in America," he said, approximately 70,000 motor cars. These do not consume as much as the 800,000 gasolene stoves which are in use all over the Middle West, where fuel is always high, and it is due to the use of gasolene for such purposes that has been the chief cause during the past five years in doubling the price of gasolene. The California and Texas oils are practically barren of gasolene distillates, and while the supply of gasolene is not growing, its consumption is rapidly increasing. What is our remedy for this threatening situation. It lies in the direction of vegetable alcohol. At present the United States Government taxes all alcohol $2 per gallon. There is no reason why this tax should not be removed on denatured alcohol, that is, alcohol rendered unfit for beverage. Experiments with this fuel made in France, also in America, by Prof. Elihu Thompson, show that it may be utilized as a motor fuel successfully. Germany last year used over 70,000,000 gallons of denatured vegetable alcohol." The necessity of signboards was discussed and it was decided to have a technical committee of the association investigate and report upon means of alleviating the dust nuisance. Among the other speakers were President Elliott C. Lee, Judge William H. Hotchkiss, president of the New York State Association; Sidney S. Gorham, president of the Illinois State Association; A. R. Pardington, Augustus Post, John P. Coughlin, president of the Worcester Automobile Club; Windsor T. White and Emerson Brooks.

"Fourth Frictionless Feast" Was Fine.

About the best attended function of show week was the "Fourth Frictionless Feast" of the Hyatt Roller Bearing Co., which occurred in the ballroom of the Waldorf-Astoria on Wednesday night. At midnight, when the festivities were at their height, fully 300 men were in attendance, all apparently enjoying themselves to the full. "Collation" was a mild term for the things that refreshed the "inner man," and that Peter Streenstrup, the sales manager of the Hyatt Co., who was the moving spirit and master of ceremonies of the occasion, is "wise," was proven by the programme of entertainment. There was but one male performer on the card. Mr. Streenstrup introduced all of them, not excepting a Spanish senorita.

Motor Cars get Mail Contract.

According to advices from Santa Fe, N. M., the post office department has just given the contract for carrying the mail to the longest automobile mail line in the world—from Torrence, the terminus of the Santa Fe Central Railway, to Roswell, Chaves County, N. M., over 100 miles, across a practically unsettled land. At present mail from Roswell and the lower Pecos Valley must be sent around by way of El Paso or Trinidad, a detour of several hundred miles. The automobile line has been in operation ten months and is giving good satisfaction.

Weston Succeeds Dr. Brandow.

At the annual meeting of the Berkshire Automobile Club, Pittsfield, Mass., Franklin Weston was elected president to succeed Dr. Frank W. Brandow, who could no longer attend to the duties of the office because of ill health. The other officers were as follows: First vice-president, S. G. Colt; second vice-president, Courtland F. Bishop; corresponding secretary, Robert T. Parker; recording secretary, E. H. Kennedy; treasurer, L. A. Merchant.

Merion Prepares to Mulct Motorists.

In accordance with the power granted townships of the first class by the Pennsylvania Legislature, the commissioners of lower Merion have passed an ordinance limiting the speed of automobiles to one mile in six minutes. Penalties of $10 for the first offence, $25 for the second and $50 for the third are provided for. Signs to that effect will be posted.

Odd Accident While Cranking.

Fred T. Sholes, president of the Cleveland Automobile Club, is confined to his home because of a rather peculiar accident. He was cranking his car when his left foot slipped on the ice and the weight of his body was thrown sharply on his right ankle. It was twisted to so great a degree that the larger bone snapped.

Pierce to Enter Foreign Tests.

America, in the form of a Pierce-Arrow car, is this year to be represented in the Herkomer Cup contest and other foreign touring trials, the George N. Pierce Company having already decided on this move. Percy Pierce, who won the Glidden trophy, will pilot the car in the foreign contests.

The Noise Fully Described.

"The loud, whirring, wheezing, puffing, coughing, chugging, buzzing, clanking, rattling, popping machine" is the way a plaintiff in a damage suit in Ohio describes an automobile.

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The Show Beautiful, also Instructive



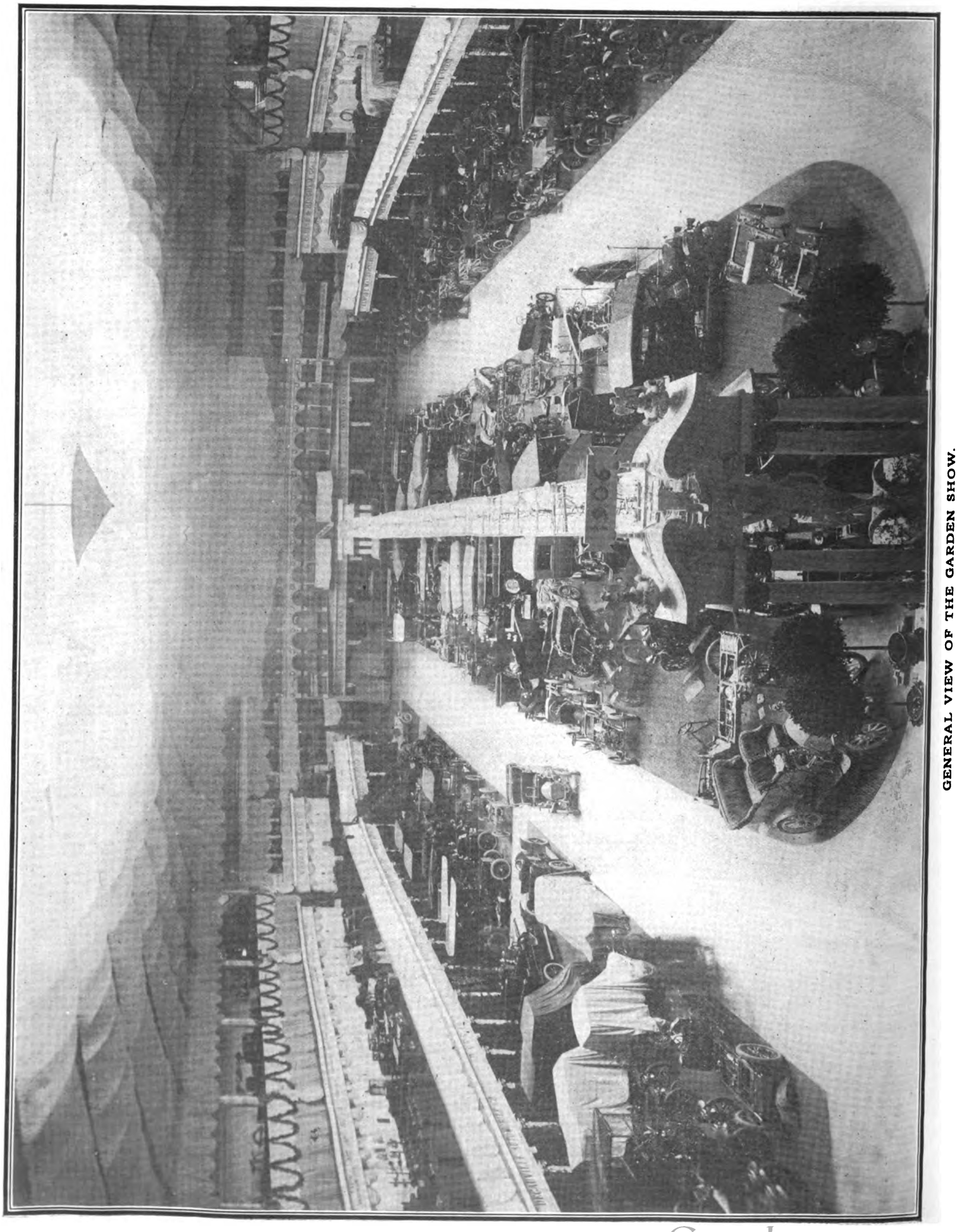
When one views a glorious landscape, if he has but half an eye, he is bound to be impressed. But unless he has the soul of an artist it is all landscape that he sees. The pictures within the picture are apt to escape him or to pass with scant appreciation.

So it is with the Association of Licensed Automobile Manufacturers' Show at Madison Square Garden. Speaking solely from the viewpoint it is easily the most beautiful picture which ever supplied the setting for an industrial display. Advance reports of the beauty were not too fulsome. But it is all one picture. Its very harmony—its entire lack of contrasts in adjoining exhibits, however jarring and offensive to the eye, makes the task of the word painter no easy one. There are not many colors into which he may dip his pen.

The setting of one exhibit is the setting of all exhibits. Particularization is impossible. If, from the professional standpoint, the word juggler would have it otherwise, he would not have it so, if he consulted his sense of sight.

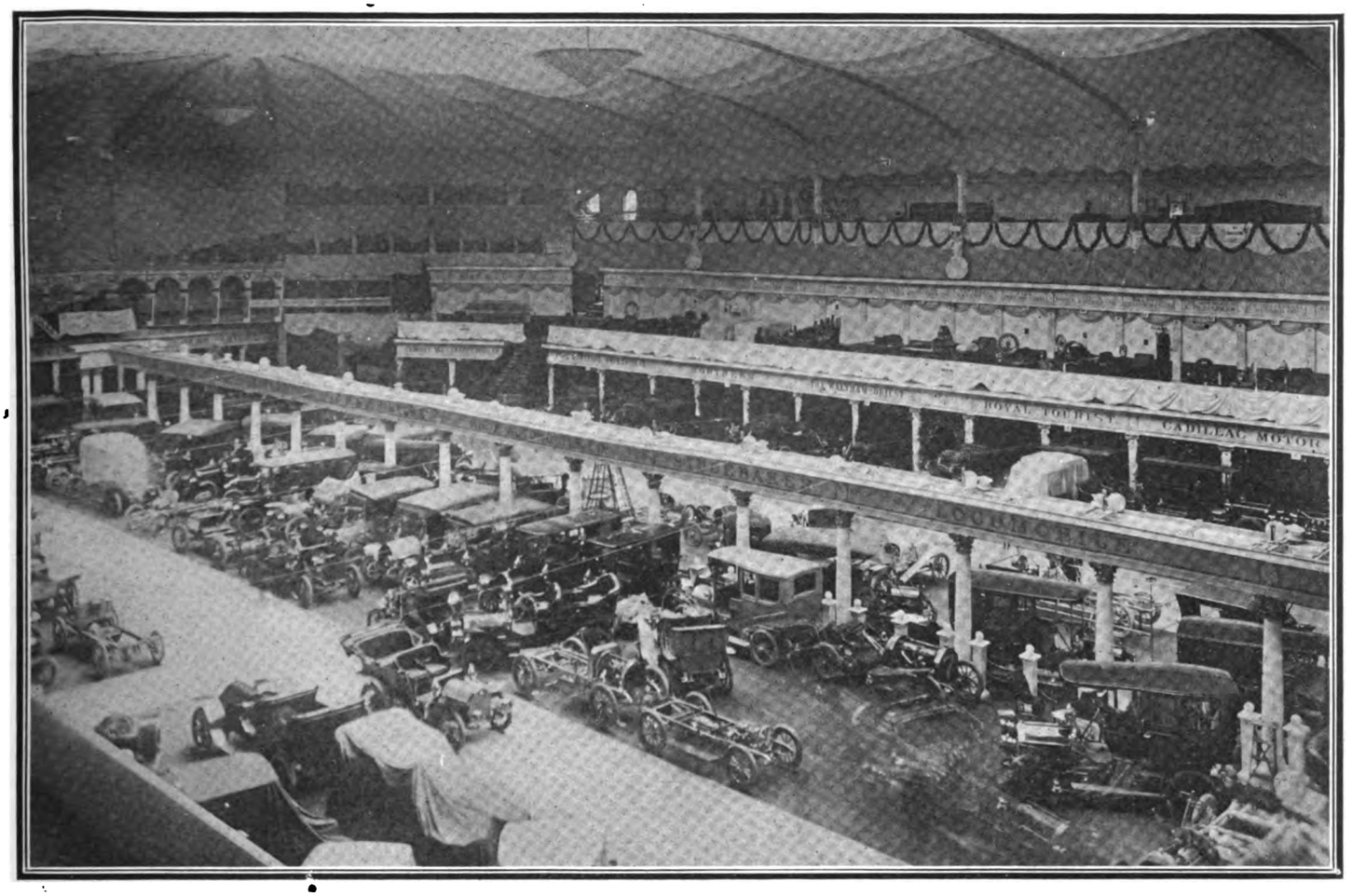
As it was on Saturday night last, when the doors were thrown open and as it will remain until Saturday night next, Madison Square Garden is almost dreamlike. Remove the modern motor cars and it would be easy to imagine that a playwright had created a masterpiece of the Roman era and that all was in readiness for the players

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GENERAL VIEW OF THE GARDEN SHOW.

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VIEW FROM THE NORTHWEST CORNER OF THE GARDEN.

and the populace. The great amphitheatre bears no resemblance to its usual self. The heroic white figure of Speed, poised 'tween the columns of the Roman arch and at whose feet a fountain plays and golden frogs look upward, charms the eye at the entryway. The "Automobile Girl" and the "Chauffeur," each with outstretched arm, and each of gleaming white, one on either side of the main entrance to the area, stand as if bidding welcome. Above is the blue canopy studded with gilt stars; the rails of the successive tiers of balcony look not at all like balconies. They are hid by graceful trappings of white and sea green, here and there pinned by white figures of nymphs arising from a scolloped shell. The centre of the Garden is bisected by a row of Roman columns topped by connected cornices studded with electric bulbs so shaded that there is obtainable that art-gallery effect; the light illuminates the names of each successive exhibitor, which are fashioned in letters of gold. Nowhere is there a discord. Looking upward from the arena floor one would not suspect that exhibits were housed in the upper galleries. They are not to be seen from below.

The whole effect is as of one beautiful picture, quiet, refined and restful. The one slight marring effect is obtained when it is viewed from aloft. The line of demarcation between the exhibits on the main floor is a slight one—a mere line in the carpeting of golden bronze. It is not easy to distinguish one from the other and there are those exhibitors who have so crowded the spaces which they occupy that some confusion is the result. Their cars are fairly packed into place. There is not even elbow room between them. There is no regard for artistic or even eye-pleasing angles or positioning. It constitutes a blur on the picture and if the picture effect is to obtain another year this detail simply must be considered.

Save the cars themselves, a highly polished chassis or a crankshaft on other part, or some parts, in the rough, is all that is to be seen on the main floor. Carpeting, chairs, desks all are alike. Of the chassis and parts, it is to be said that their workmanship and polish are such that the foreign exhibitor no longer enjoys a monopoly of an exhibit that in former years used to tremendously impress the beholder and serve to "convince" him of the alleged superiority of the imported product. The American display of chassis and part is in every detail the equal of those that come from across the sea and every whit as handsome to look upon and as impressive.

Although the weather Saturday night was not exactly propitious and comparatively few free tickets were in circulation, and though the aisles are much wider than in previous years, the Garden was packed as on all former occasions of the sort. The crowds were much like the crowds of yore, and strange to remark, there was not so much comment regarding the beauty of the scene as of right was to have been expected. Although it was evident that many of them were curiosity seekers, all seemed to have eyes for the cars—or costumes—women's costumes. Some of the women, in some of the most stunning costumes, as usual, became weary and found rest in the cushioned seats of the cars most comforting and convenient. That position also enabled them to see and be seen to much better advantage! There were many, very many, however, who made the circuit of the show and then betook themselves to the other show "across the way." This was going from one show to the other is distinctly the "proper caper." Attempts have been made to make it appear that one or the other is the "society function," but the result is feeble. There are as many well dressed, well fed, well bred people at the Garden as there are at the armory, and as many at the armory as there are at the Garden.

So far as the cars themselves are concerned, there are few of them that have not been already seen or described in at least general terms. It takes painstaking delving to discover anything of particular interest that is not already known.

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The Show from the Engineering Viewpoint

By Henry Souther

Features are looked for in the Show by the casual observer, but perhaps the most important one in the Show will be overlooked by most observers, and that is the presence of the large steelmakers of the country. They are in evidence for the first time with exhibits of samples of their work; samples of their steel; broken test specimens, showing the toughness, ductility and strength of the steels they have to offer. It is a very important thing that these exhibitors are on hand, because it shows that they are now ready to meet the wants of the automobile manufacturer and give him the steel he asks for.

The great Krupp Steel Company, of Essen, Germany, has a fine exhibit, showing the products of their concern especially adapted to automobile work. No foreign concern, however good, ought to have found a foothold in this country among the automobile people, and would not if the American steel manufacturers had been willing to believe that the demand for fine steels would have become so strong as it is at this moment. The large American steel maker has been made to sit up and listen by the foreigner; another illustration of the fact that competition is the life of trade and results in what is best. Exactly the same materials are offered by home and foreign producers, notwithstanding the glamour and mystery that the steel agent endeavors to throw around his particular steel. Notwithstanding the fact that each one of these manufacturers claim that he is the only one who can produce automobile steel, steels of equal quality are produced by all of them, analyzing the same, testing the same and behaving the same under the equally skilled treatment in the hands of the user, the treatment being quite as important as the composition and method of manufacture.

In the past the large steelmakers have been too busy with customers demanding a greater tonnage and uses going into large structures. Now the automobile industry steps into the ranks of first importance and, as usual, the manufacturer meets the demand.

All the talk about the wonderful steels used abroad will sink into insignificance because of the immense quantity of just the same steels that are offered by such companies as the Carpenter Steel Co., the Bethlehem Steel Company and the Midvale Steel Company, all home concerns of established reputation; makers who have known for years how to make good steels, but who have not offered them in the machine makers market because there was no demand. Their best steels went to the government for the high-class demands of the torpedo boats, battleships, guns and projectiles.

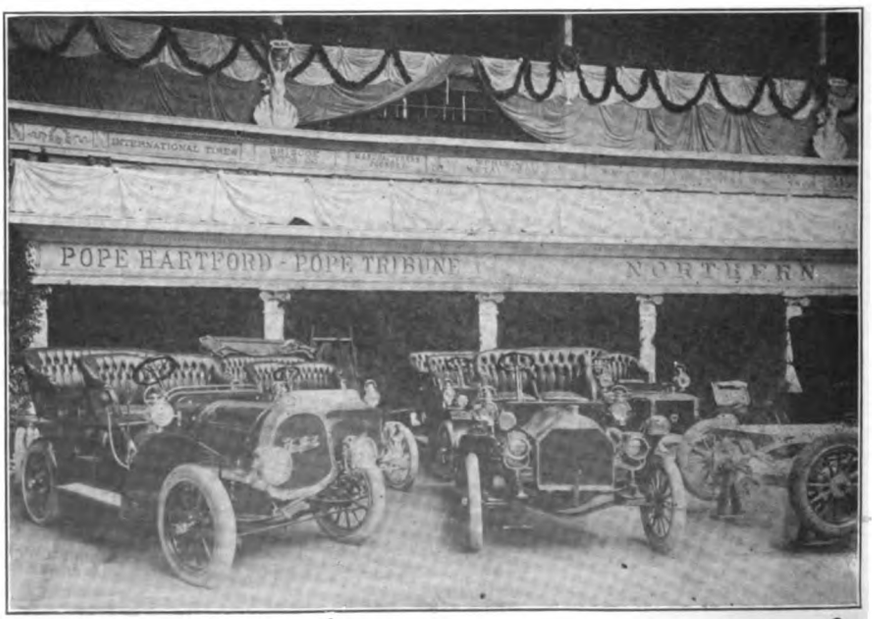
Steel for tools demands as much, if not more care than the steel they are now producing for automobile construction. No one imagined a few years ago that the automobile manufacturers would be willing to pay the same price for structural steels as for tool steels, but such is the fact, and steel of this character is to be seen distributed all over the Garden among the high priced high-speed cars.

The spring maker, one who contributes so much to the easy riding and pleasure of a car, has also awakened to the fact that high-class steels will be paid for and he is ready to put good steel into springs. The result is that the cars are more easy riding than formerly, the springs more flexible and the liability of rupture greatly diminished. Good steel spring in plenty has always been available at a price.

Lightness is, of course, a necessity; the lighter the car for a given strength the better. The makers of alloys of aluminum have been making a most careful study and research for the best alloys possible. Large concerns who paid no attention to the automobiles a few years ago have now started departments devoted especially to the manufacture of castings of great strength for automobile purposes. Alloys of aluminum possess now after this careful study, nearly double the strength available a few years ago, and with a considerable degree of ductility as well, formerly not obtainable. Manganese bronze and aluminum bronze have come to the front and the casting of them has reached a high degree of perfection, bringing about splendid combinations of strength and ductility. Such concerns as Cramp Ship and Engine Building Company and the Light Foundry and Manufacturing Co. are in evidence at the show with these wares.

So great has the trust become in alloys of this kind that prominent automobile manufacturers like Knox and Winton have introduced them into so vital a part as the front axle, although Knox has always used an alloy of this description for its front axle with absolute success.

The casting of automobile cylinders, perhaps the most intricate and delicate bit of cast iron in the market, has led to specialists in this line, as indicated in the exhibits of the Manufacturers' Foundry Company. Such castings as these have been habitually avoided by the foundryman. The accuracy necessary in the manufacture of cores and the setting of them, and then, finally, the pouring of the iron into these shapes has discouraged almost all foundrymen. They could not do it for the price ordinarily paid for castings and did not think that the demand would be so strong as to force the production of castings at almost any price. Such a demand has arisen, and, as usual, has been met by the enterprising foundryman. At least one of the automobile makers, the Olds Motor Works, have their own



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foundry and pour special irons for the purpose.

Construction and Design.

In the construction of the cars there is variety in plenty, but few freak ideas. Thoroughly digested sound construction is the rule. The evolution of the last few years has told all along the line—well designed engines, well designed frames, transmissions, brakes, steering mechanisms, axles and wheels. The vitals of the car have reached a stage of perfection comparable with older constructions, such as railway locomotives and coaches. Structures reaching the high state of efficiency demanded by high speeds and bad roads are here. The danger of rupture has been reduced to a minumum and long life in motor cars is insured. A glance at the axles, steering mechanism, frames and springs by the layman is enough to convince him of the determination to make machines that will last. The increase in dimension of the vital parts coupled with the use of steels two and three times as strong as in the past is bound to make itself felt.

Long wheel bases, much longer than last year, are in evidence; even cars of small power have lengthened wheel bases. Last year it was the usual thing to find the front axle pretty well under the middle of a four-cylinder engine; now it is as often under the radiator, or as nearly there as elsewhere—all this with an idea of getting longer wheel bases and not longer bodies, and therefore without increase of weight.

Every type of motor is to be seen, single and double cylinders horizontal, double cylinders vertical and, of course, the four and six vertical.

Chain and bevel gear drive for all powers vie with each other for supremacy. There are strong advocates of both to be found if you are looking for a discussion as to the relative value of the two systems. A fact overlooked by general observers, however, is that in every double chain drive car there is a pair of bevel gears in the transmission box instead of on the rear axle, as with the so-called bevel drives. This disposes of the extremists' argument—that bevel gears will not do because they consume power. They are there in some shape or other in nearly every car, the only bone of contention being as to whether they can be suitably held in place on the rear axle, it being admitted by all that they are the right thing if they can be as well held in place as they are in the transmission gear case.

The same air-cooled cars are present as were present last year. There were no additions and no desertions, so it is fair to assume that the air-cooled engine has satisfied enough people to make them a perfectly successful mechanical and commercial venture for the manufacturers. This is the best proof that the air-cooled engine is a success and is practical. The water-cooled motor is, of course, in the majority.

The two-cycle motor has made a step ahead. The movement started by the Elmore and continued by them for so many years, now has been taken up by the Olds people. It is a most interesting proposition from a mechanical standpoint and will bear watching. This is important when it is realized that a two-cylinder, two-cycle motor gives just as many explosions for a given number of revolutions of the fly wheel as a four-cylinder, four-cycle motor gives; and that a four-cylinder, two-cycle motor is the equivalent of an eight-cylinder, four-cycle motor. The two-cycle motor requires no valves, either automatically or mechanically operated, thus reducing immensely the number of parts in an engine. The piston of the engine performs all the functions of the valves of a four-cycle motor, coupled with the device for precompressing the charge before it enters the explosion chamber.

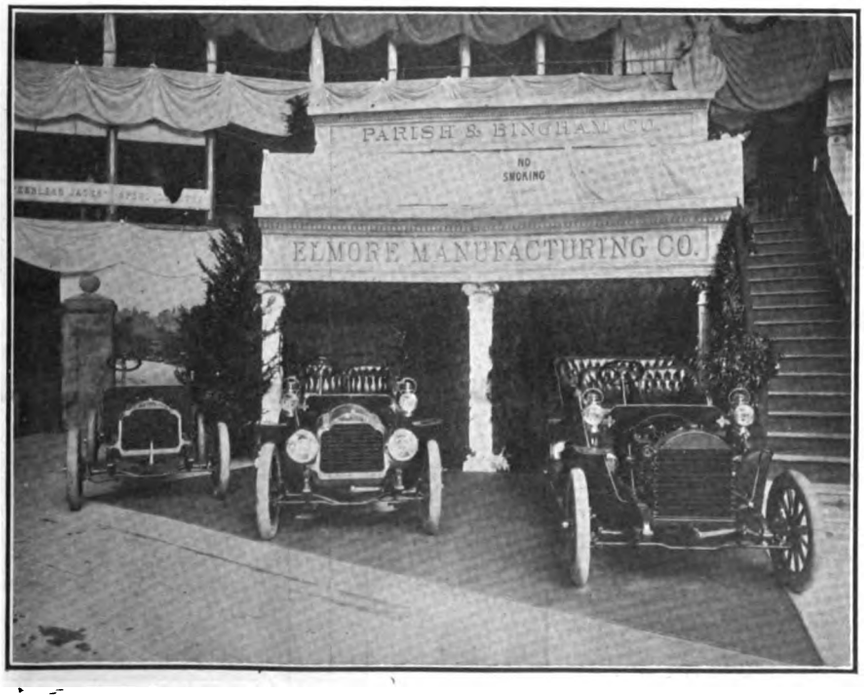
It has some drawbacks, perhaps, in the fact that a reasonable speed of motor must be maintained at this time to get the highest efficiency, but that is something that will be taken care of with experience, just as it has been done with the four-cycle motor, following increase of knowledge and experience.

A year ago the gasolene commercial wagon was not an important factor in the exhibit. This year in the basement is to be found a very large number of a variety of trucks propelled by gas engines. They are to be seen in large and small sizes, four cylinder and two-cylinder, some vertical and some horizontal, air-cooled and water-cooled.

During the past year the public has become familiar with the appearance of many of the various vehicles exhibited, as they are in common use in the streets of the large cities, and particularly in the cities where they are made. The manufacturers have had them in use for their own purposes so as to thoroughly test them out before offering them to the public. They are now before the public as a product well tested, well digested and ready for business. This year some of them make their first appearance in a show, but by no means their first appearance as a practical vehicle.

All of them show evidences of careful study to make these commercial trucks practical for the ordinary teamster to handle. Engines of the simplest type and transmissions of the simplest and most fool-proof construction.

A most ingenious application of the magnetic clutch is found in the Pope-Hartford motor truck. A control has been devised that is as simple as that of an electric wagon, with no possibility of stripping gears through ignorant handling and with no clashing of gears and consequent wear. The description of the clutch sounds complicated, but its manipulation is simple, indeed.



Motors.

The four cylinder motor predominates, that is sure, and most of them are cast with their cylinders in pairs. But there are exceptions. In the Pope-Toledo, for instance, is found a composite casting scheme with the straight portion of the cylinder cast separate and all tied together by cylinder heads containing the valves, cast in pairs. Also the Northern shows a four cylinder motor in one casting, neat in the extreme as to its exterior appearance.

Of course the air cooled adherents necessarily cast their cylinders separately. Some of the motors, in fact, quite a number, are supported at three points only, so that no weaving or bending of the frame is transmitted to the engine base construction, thereby setting up strains in it that should not be there.

Motors hung upon the main frame or upon the subframe are both to be seen, and without accurate count it would be difficult

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to say which has the superiority in numbers. Suffice it to say that in all cases the means of support is very thoroughly and efficiently worked out, combining simplicity, strength and neatness of appearance.

Beautifully finished motors are on the increase, extremely neat arrangements of intake and exhaust pipes and, in general, a finish that equals anything of a similar nature known to the engineering industries of the time—just as much refinement, if not more, than the electric motor or high class torpedo boat engine.

The Buick people are showing a new four-cylinder car and it is apparent that they have followed the daring example set by the Stevens-Duryea people in combining motor, clutch and transmission in one continuous structure, supported at the front on two points, at the rear on one, with the fly-wheel at the front end of the motor.

Stevens-Duryea have carried this same construction into their big 50 horse-power six-cylinder motor, and apparently with perfect success. A demonstration of this car revealed its smooth running, perfect control and enormous power. Speed as low as five miles per hour on high gear was easily possible, the engine responding immediately to the opening of the throttle. The length of this motor as seen from the driver's seat is impressive; the front of the motor is a long way off. There is a feeling of confidence as to its ability to get there not inspired by the shorter motors of four cylinders only.

Perhaps the most unique, daring and beautiful piece of engineering in the crankshaft line is to be seen at the Stevens-Duryea stand. An exhibit of the crankshaft actually used by these manufacturers in their six cylinder car is mounted for examination. The feature of it is the large Hess-Bright bearing in which it rotates; four bearings containing balls 1 1-16 inches in diameter, about 5 inches in diameter from center to center—generous in the extreme and because of this generosity sure to perform their functions well under any kind of punishment. It is a beautiful piece of work and sure to attract the admiration of the automobile engineers even if all of them do not support and endorse the idea of a crankshaft run on ball bearings.

Lubricating Systems.

The variety in lubrication is greater than ever, and, strangely enough, a new feature has come to the front; that of neatness connected with the filling of the lubricating tanks. All who have had any experience with cars know how bad a mess has been made by careless spilling of oil about the footboard and dashboard of automobiles. Trying to fill the tank hurriedly on a long run, or in the dark garage, oil is spilled.

Now a small tank is carried outside the frame, so that in case any oil is spilled it is spilled on the ground. The oil is forced from this low tank to one on the dash holding just the supply that is now ordinarily available. Furthermore, the oil tank has a capacity so large as to make it unnecessary to carry inconvenient and dirty oil cans under the seat of the car on long tours. One tank of oil will last from three to five hundred miles, depending only upon the tightness of the bearings and the leakage from the engine. This is more of a change than appears at first glance. The pressure in the large tank is supplied by various means, some machines by a shunt from the exhaust, some by air pressure furnished by a little hand pump; but whatever the means the additional complication is well worth while.

Just about the same number of pressure feeds are found with their sight feed glasses, some of them on the lubricating tanks themselves and some of them on the dash entirely separate from the tank containing the oil; all of them very much neater than in the past, and all of them so devised as to prevent badly arranged dripping devices so that the rapidity of feed is very hard to see, especially in the dark.

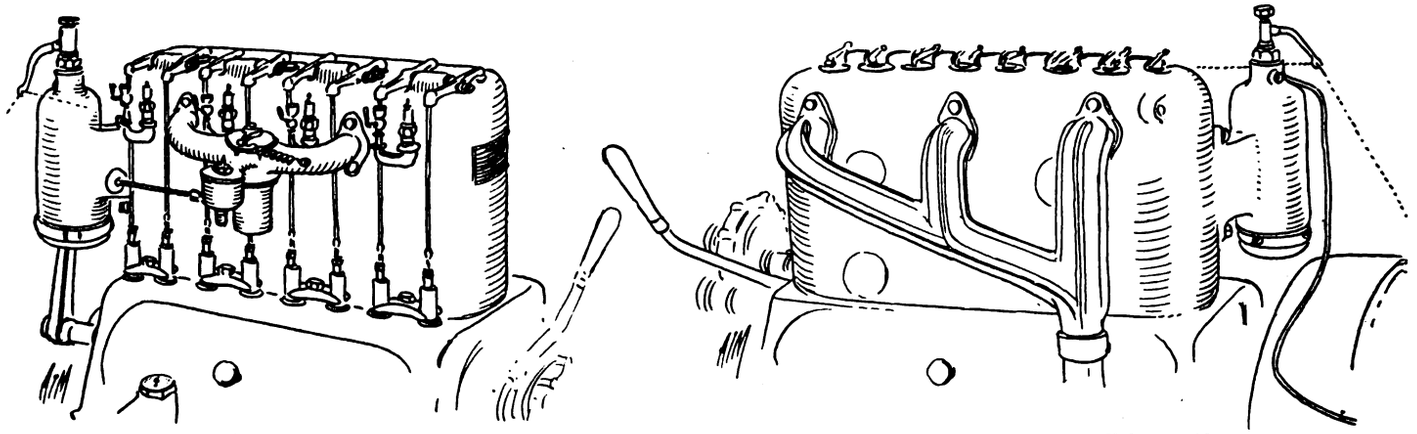
The standard lubrication used on the Pierce has been followed with modifications by several others. In connection with this there are no sight feeds, no oil boxes on the dash at all and very short lengths of lubricating pipes and all these of generous bore. The principle of flooding the bearings and allowing the surplus oil to find its way back into the tank either by means of a pump or gravity is gaining adherents.

The lubrication in the Cadillac is rendered extremely positive by a ratchet pump working under high pressure, some 60 pounds per square inch more or less, forcing oil to the main bearings of the engine. This oil after leaving the main bearings finds its way by centrifugal force to the bearing surfaces on the crank pins. Other oil splashed by the gears finds its way into channels around the crank case, and by splash to all working parts of the motor. This renders the lubrication certain.

In the new four-cylinder Oldsmobile, copious lubrication by means of a pump from a reservoir underneath the engine base and a large supply tank at that point has been adopted, channels about the crank case conducting it to all the bearings. The same shaft that drives the pump in this case also drives the commutator, and should, by any means the oil pump cease to work, the commutator would also stop and give due warning of improper lubrication.

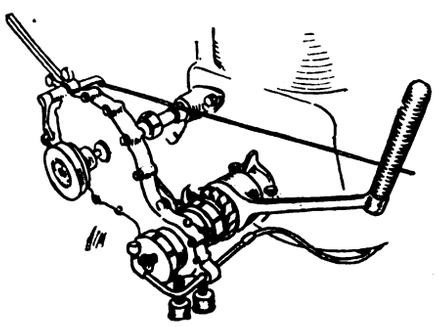
Certain it is that proper lubrication insures long life in the engine bearings as no other thing will do. There is no use putting the best of babbitt, the best of bearing bronze or anything else into the bearings of an engine if they are not copiously and thoroughly lubricated. No combination of metals will run dry if indifferently lubricated.

Right here in the matter of lubrication is



Inlet side — Exhaust side

THE NORTHERN MOTOR, SHOWING AIR PUMP AND STARTING LEVER.



NORTHERN MOTOR.
Showing Commutator, Water Pump and Air Connections to Clutch.

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to be seen one of the greatest steps in advance in the automobile industry.

In the Northern car there is to be seen no evidence of lubrication. No tank is in sight even to contain the lubricant, but careful investigation reveals a four gallon tank as a part of the pan under the engine, this being connected like other lubrication systems with the crank case, and results in a splendid system of splash lubrication.

Objections will be raised by some to the fact that lubricating systems without sight feeds do not indicate when the lubricating ceases if anything goes wrong, but such cars have been equipped with try-cocks which can be opened a little, and if the oil is circulating as it should be a flow of oil will be instantly in evidence.

Valves.

Changes in minor details are found on every hand as to the operation of the valves. All are of the poppet type, as in the past. That seems to be essential up to the present time for gas engine purposes. Automatic inlets are few and far between, and yet they are found on such a splendid machine as the Pope-Toledo.

The location of the valves, as in the past, is very equally divided between two on one side of the cylinder and one on each side, and all in the heads directly over the top of the cylinder. Both of the Pope-Toledo valves are found in the top, one the inlet suction and the exhaust operated by walking-beam mechanism. This is a radical departure and is made a part of their new motor cylinder construction. The Packard engine has changed its valves from both on one side to one on each side of the cylinder, operated by two cam shafts, both the Locomobile and Packard being supplied with two cam shafts.

A departure from the accepted means of operating valves is found on the Matheson car, the secondary shafting being near the top of the cylinders, the motion transmitted to it by bevel gears from crank shaft. They use the valves in the top of the cylinders, operated by cams and cam mechanism that is exposed.

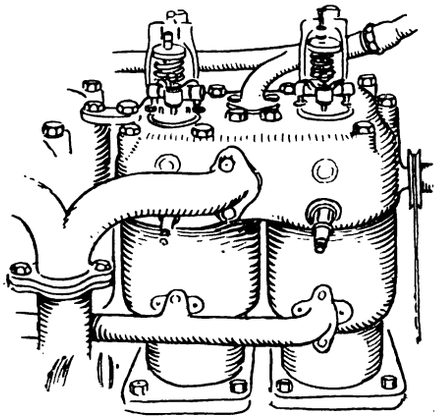
The Pope-Hartford, four-cylinder valve motion, is all produced by walking beams from the secondary shaft and the valves are located on the tops of the cylinders, all eight of them being operated mechanically. This system has been splendidly carried out and can not help giving good service.

It looks as though the location of the valves was being determined in many instances entirely with a view to obtaining neatness and symmetry in the general appearance of the motor. This being true, thermodynamic efficiency is suffering in many cases; not too much, to be sure, but to some extent.

As time goes on, if automobile engine development follows the line of steam engine development, such things as style and symmetry will have to take a back seat and yield to efficiency. When this comes about, then the valves will all be found in the tops of the cylinders just as in the many cars referred to as having them there.

The Apperson car is supplied with valves on opposite sides of the cylinders, and, in addition, two sets of spark plugs, one over the inlet side and one over the exhaust side, one set being fired by magneto and the other set held in reserve to be used in connection with the battery, thus giving two complete ignition outfits. This system has a fine advantage in being able to find out in all probability whether any skips or misses are due to ignition troubles or to something else.

The new four cylinder Knox has most carefully arranged valves in the top of its cylinders, operated by long walking beams set at an angle of 45 degrees with the axis



POPE-TOLEDO MOTOR.
Showing Automatic Inlet Valves.

of the car, the idea being to give a long walking beam and as little angular motion as possible.

The Franklin's valves are all in the heads of the cylinders as they have been in the past few years. This arrangement is most important in the air-cooled car, allowing, as it does, the diminution of heated area in the explosion chamber and contributing to the ease of cooling. The Franklin also adheres to its exhaust port at the lower end of the stroke, having found by experience much assistance in getting the heat out of the motor as quickly as possible after the charge is fired. A separate valve is supplied at this point mechanically operated.

Carefulness of the workmanship of the valve operating mechanism and quietness has been studied, in fact some of the motors operate almost without a sound.

Brakes.

That most important adjunct of the automobile, that which contributes so much to its safety and efficiency—the brake—has received most painstaking study. Increased dimensions all around are universal. Braking surfaces four and five times as generous as those of the past are to be seen in dozens of cars. The wire cable replacing steel rod connections has made decided gains as connections between levers and the brake bands proper. Prejudice against this has existed in the past but has become fully overcome by actual use and experience. Increased knowledge as to the proper materials to be used in the cables and the proper attachment of them to the rest of the mechanism has solved the problem, and the brake cable has arrived and is likely to stay, because of a great many reliable features. It is so constructed that both bands on the rear wheels, for example, take hold with equal force without necessitating the minute adjustment that has been required in the past. It has been no uncommon thing to find a car with all the force applied to the brake band operating on one wheel, instead of being equally divided between two. This improvement is as it should be.

The hand brake that pulls toward you instead of pushing from you is found in a great many new places. It represents a step in the right direction; for, is it not easier when a brake is to be applied with a foot on the clutch pushing, to pull with the arm rather than to push with both arm and foot?

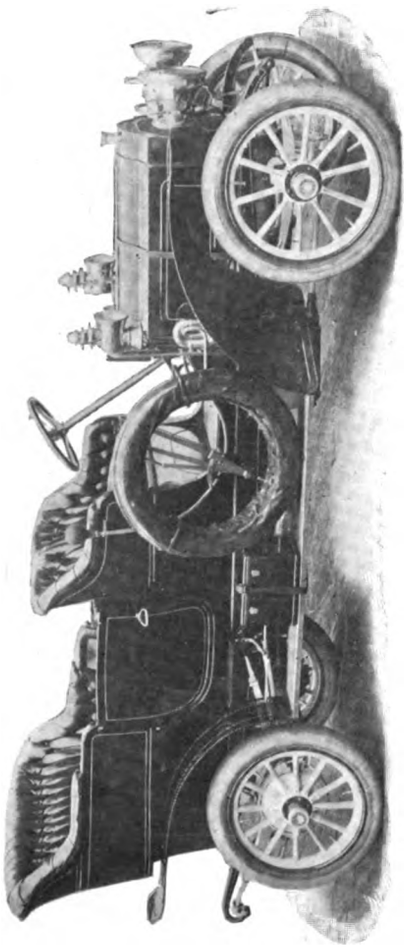
The greatest novelty in brakes is undoubtedly to be found at the Northern exhibit, where a brake is seen applied by air pressure, just as are the brakes in a train of railroad cars. The air pressure is supplied by an air pump driven by a crank on the end of the cam shaft giving air pressure at 75 pounds per square inch. This brake is applied by a little lever on the steering wheel moved by thumb and finger, and yet with the air to help furnishing power enough to lock the wheels where the pressure is applied.

Internal and external brakes on a drum on the rear hubs appear on many cars. Perhaps the number is about equally divided with those retaining one pair of brakes on the rear hub and one on the transmission shaft or propeller shaft, as the case may be, but in every case increased dimensions are noteworthy and to be greatly applauded. It means a brake that will last longer and be more efficient and to require less strength in application. A child can bring to a stop a heavy car with such brakes as are now in common use.

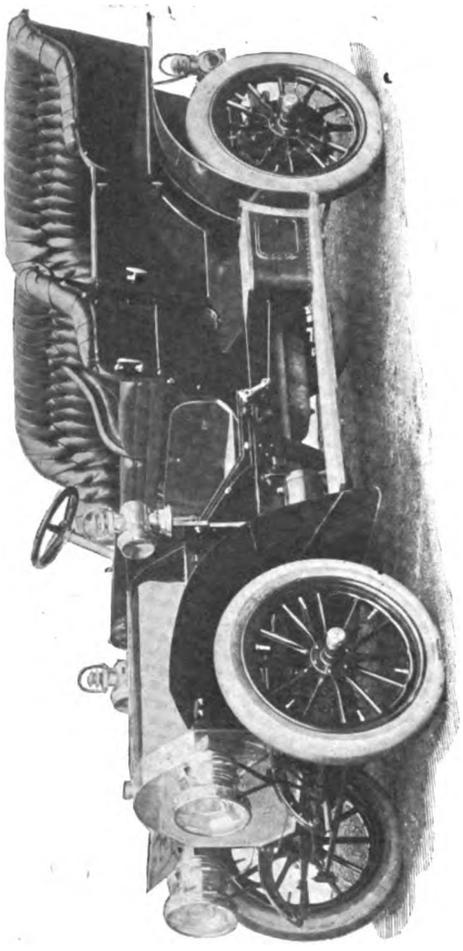
On the new Peerless models are found a pair of brake beams that have not their duplicate in the show. They necessarily give a perfectly balanced pressure on the rear hubs, dividing it equally as no other device can, and all this with absolutely no adjustment. They are simple in construction, consisting of pressed steel girders light and stiff. Skidding is minimized by this means.

The Thomas engineers have adhered to their ratchet safety brake on the rear hubs, in the old form except that they have removed the ratchet and pawl to the outside of the brake drum instead of on the inside where it has been. This is rendered necessary on account of an internal brake on the rear hubs. This ratchet may be thrown into action at the bottom of a hill. Take for example a new driver being taught with a man at his side. There may be some

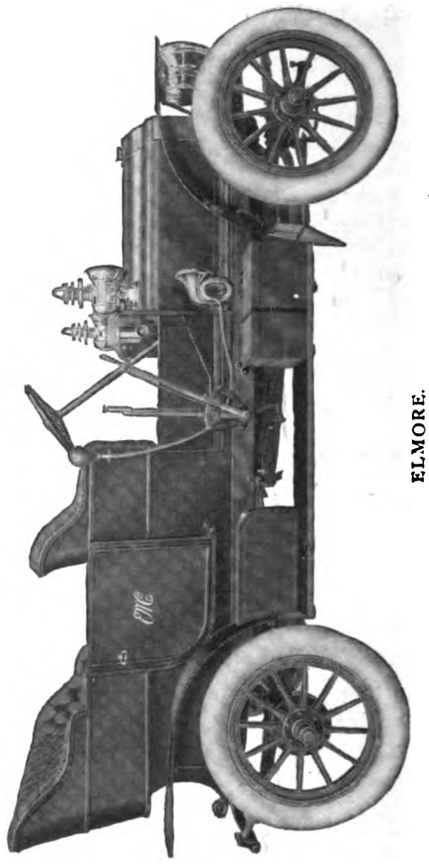
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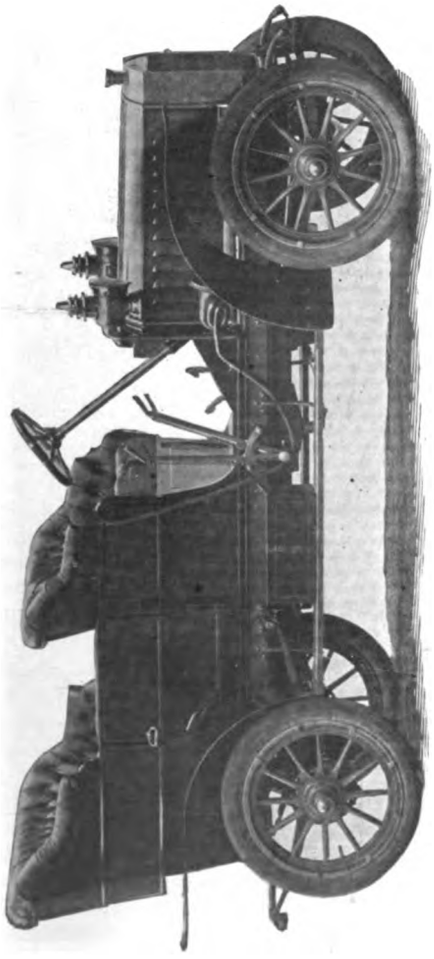
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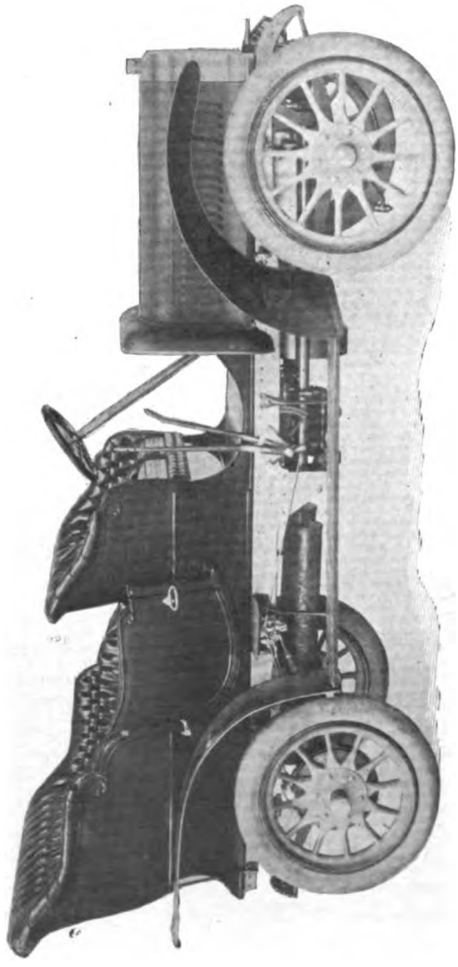
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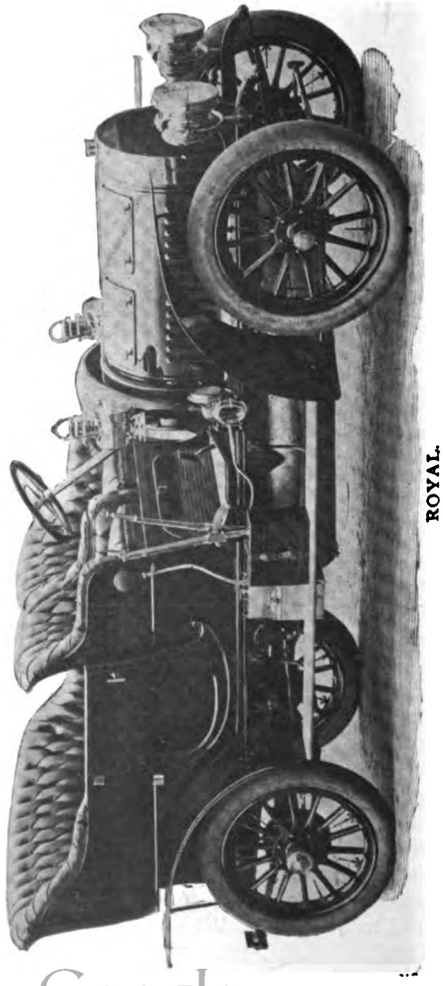
ELMORE.



AUTOCAR.



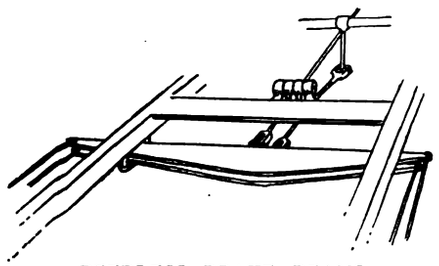
CADILLAC.



ROYAL.

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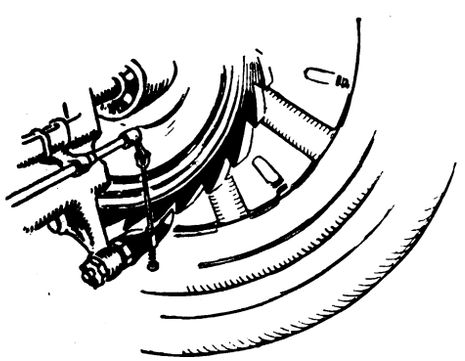
possibility of his missing his gears on the hill. The car, of course, starts back, the pawl comes into action on the ratchet and stops the car instantly. The beauty of this device is that it is under the control of the man doing the teaching, being between him and the driver. Constant use is not expected in connection with this ratchet, but when it is wanted it is wanted very badly, and may very easily prevent a very bad accident.



PEERLESS BRAKE BEAMS.

The Renault brake on the transmission shaft is of very generous dimensions, both as to diameter and width; furthermore, the exterior surface of the metal band is sharply corrugated, with the idea of dissipating heat.

Both Pope-Hartford machines, two and four-cylinder, have no hand brakes, being supplied with a full equipment of two sets of brakes operated by the foot. The material used for the brakes coupled with the generous dimensions of the brake, gives a most excellent feel to them under the foot



THOMAS SAFETY RATCHET.

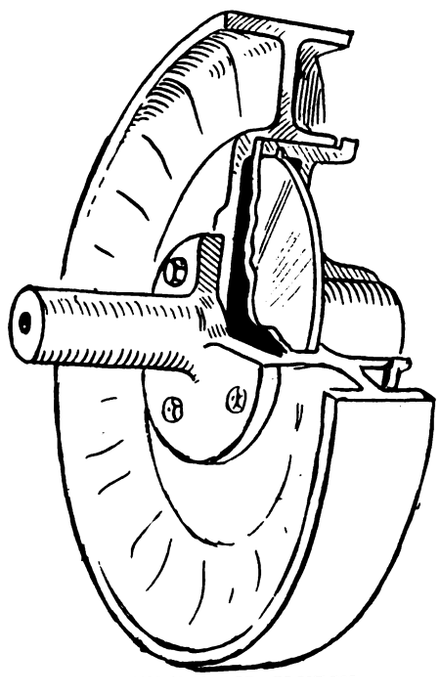
and powerful action. It is the use of what is commonly called camel's hair belting, resembling a canvas material of heavy mesh.

On the Fiat car the application of water to the brakes is a feature, the brake drum being supplied with an internal rim into which a small supply of water can be released at will from the seat, a small tank ing carried at the side of the chassis under the dash. The water is caused to flow by pressure from the exhaust.

It seems to be the general impression among the engineers that the brake that should be in use constantly ought to be an external one, wear being less rapid as a rule and renewal less difficult, the internal and second set of brakes being held in reserve as emergency propositions.

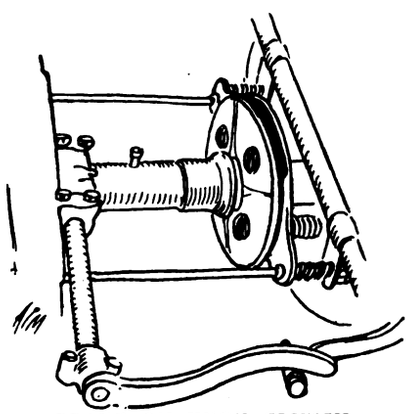
Clutches.

The all-important clutch has not been neglected, and it is apparent that no end of study, ingenuity and time has been centered on this feature. All kinds are in evidence—the good old leather faced cone of accepted type, with or without or springs



NORTHERN AIR CLUTCH.
Showing Air Passage through Shaft and Flexible Diaphragm.

underneath the leather to modify the gripping force and make them take hold gently; the metal cone running in oil, shown on the new four cylinder Knox; the multiple disc, the expanding internal band, and finally, and most novel, the air pressure clutch of the Northern car.



BRAKE ON KNOX CLUTCH.
Shaft to Prevent Spinning when Released.

The type of friction clutch, consisting of two discs, the edge of one bearing on the face of the other, is found only in one little car, and that is the Orient buckboard. It necessarily conduces tremendously to the efficiency of this little car, and is particularly adapted for use with a small high speed motor like the Orient buckboard. Infinite variation of gear is possible and desirable with a motive power of this kind. It ought to solve their problem to the queen's taste.

The Northern people have taken the same air at 75 pounds pressure that they use to operate their airbrake and applied it to their clutch. It is transmitted from the air compressor to the front end of the crankshaft, through the crankshaft, which is hollow, to a diaphragm disc 10 inches more or less in diameter, which is flexible and has a leather face. This being pushed outward by the air pressure amounting to some two or three tons, presses against the steel disc attached to the transmission shaft, the result being both flexible and positive.

This clutch can be made to slip by using only a little of the air pressure or can be made to hold tight with the air pressure full on. There is no trouble about the alignment of parts in this clutch, no care is needed to make it center exactly in the flywheel, and it allows of the very unusual construction of driving with the shaft directly from the clutch to the transmission and bevel gears on the rear axle. Alignment is not necessary, in fact the power can be transmitted around a corner as far as the clutch is concerned. It all depends, to be sure, upon the air system and its certainty, but when we stop to consider that we ride daily in trains supplied with this same air system and feel safe because the train has air brakes and air devices, we realize that if the Northern people use the same care in the construction of their air system as they have in the past with the remainder of their work that nothing is to be feared from this source.

The importance of aligning the cone clutch has caused the introduction of flexible connections in the way of cardan and universal joints between the clutch to the transmission case almost universally. Experience has taught that a cone clutch not in line absolutely does all sorts of queer things and that lack of alignment has been the cause of bad behaving clutches more than any other mechanical point.

On the new four cylinder Knox a device has been provided that ought to be of much benefit—a small auxiliary braking device on the clutch itself which operates automatically, so that when the clutch is released from the flywheel it does not continue to spin and render the changing of gears a noisy operation. The clutch and its shaft are brought instantly to a standstill. The gears may be changed without clashing; when the clutch again engages this little braking device is released, all without the knowledge or attention of the operator of the car. It is a complication that simplifies and is well worth while.

The Rochet-Schneider clutch is radically different from others shown, consisting of a small diameter split steel internal band, expanding against steel and running in oil. The "feel" under the foot is extremely delicate, due to a long powerful spring. The Thomas car departs from the cone type clutch decidedly and uses a larger diameter, some 20 inches, with the shorter arm of a lever pressing against a floating ring and

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binding the fly wheel to it. The Autocar clutch, although not the same as the Thomas, is not unlike it in some of its features and consists of pinching a ring lugged to the fly wheel between two floating members. The Haynes clutch is one of the gripping band type, further modified by springs interposed between it and the fly wheel, so that it cannot take hold too sharply.

It is apparent that the clutch problem has not been finally settled. Had it been settled there would be no such attempts as are seen throughout the well constructed and well considered cars to find something different. All are familiar with the cone clutch—all have not adhered to it, but it is probable that most of them have tried it more or less. There is as much variety in the design of clutches as exists in any one feature of the accepted car of high grade. Each one has a strong impression that his is the best. They are all doing pretty good work, as is shown by the behavior of the cars. Further developments in clutches may be looked for.

Transmission.

Those who anticipated a radical change in transmissions will not find it; the same sliding gears are in evidence; they vary only in detail of operation and their arrangement. This form seems to have come to stay and the difficulties formerly existing have been so thoroughly worked out that there really is now very little that is objectionable. Like much else about the motor car in its infancy, problems that seemed insurmountable then have been overcome, and the sliding gear transmission is a success. Three and four speeds ahead with a reverse are furnished, most cars have three speeds ahead only. The transmission box is found mostly under the body between the rear axle and the fly wheel. The Packard has its on the rear axle in the same box with the bevel gears, also the new four cylinder Northern.

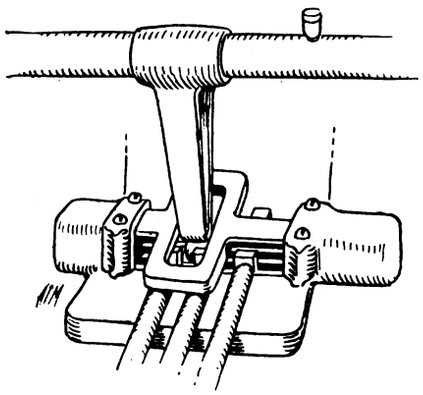
With one exception the bevel gears on the chain driven machines are found in the same gear box with the driving gears. That exception is in a foreign car, the Clement-Bayard, where the bevel gears and the differentials are grouped in a separate box on the sprocket shaft, leaving the sliding gears to themselves.

There are two means of operation nearly equally divided as to numbers, one called the selective system, where the lever works in an "H" casting, allowing the engagement of any gear at will without the necessity of passing through another gear, as is necessary in connection with the progressive system. Both systems have the strongest kinds of adherents, and it is safe to say that an operator becomes easily accustomed to either one or the other, it all becoming a matter of habit.

A nice detail of the Stevens-Duryea control is the arrangement of the notches in such a way that change from the intermediate gear to the high speed is made by simply pushing the lever ahead without thought of a notch and without the necessity of raising the latch; and in coming back simply pulling back the lever with the assurance that the latch will catch in the middle notch without any thought being given to it. This wonderfully simplifies the change from middle to high and back again.

The Apperson people furnish two forms of transmission, a four-speed ahead with the selective and a three-speed ahead with the progressive system.

The Pierce-Arrow keeps its gear changing lever under the wheel as formerly, but a change in their transmission has been made so that the car is on the direct drive through to the bevel gears from the engine when on high speed gear. Formerly they have driven through gears even to the highest.



KNOX GEAR INTERLOCKING DEVICE.

The Pope-Toledo transmission is quite different from any of the others in the fact that the main shaft and lay shaft are at right angles to the axis of the car instead of parallel with it, which, of course, necessitates the sliding motion of the gears across the car instead of endwise with it. Direct drive on the high gear is furnished however just as with the other arrangement, their system of change being of the progressive type.

The Winton Co. adhere to their old type of two speeds ahead and a reverse with independent friction clutches to the gears, all enclosed within the transmission gear box.

The planetary system is found of the three speed ahead and reverse type in the large four-cylinder Cadillac car. This company has had one year with this type of transmission and are satisfied with it; it has given them good satisfaction even with the large amount of horse-power developed in their large motors. The dimensions of this planetary system are most generous and herein undoubtedly lies the success.

There are no freaks in the way of transmission in evidence as there always has been in the past; the systems are all pretty thoroughly worked out.

In the new four-cylinder Knox car is found an innovation in what may be called a double-faced bevel gear, one face doing the driving on all speeds but the high, and the other face of the bevel gear doing the work on the high gear. This makes the transmission of power a little more direct when on the lower range of gears. It is simple and well worked out.

Safety locking devices controlled by the movement of the clutch are on the increase. When the clutch is engaged a bolt or pin of some kind locks the gear shifting mechanism absolutely. Pressure on the clutch pedal unlocks it. This makes the attempt to shift the gears while the clutch is in out of the question. Of course, experienced drivers never do this, but all drivers are not experienced and the device being a simple one serves a good purpose.

The means of moving the gears are various and most ingenious, that is the details of the mechanism between the hand lever and the point of application on the gear.

Ball bearings of the Hess-Bright type and large ones at that, are found in a great many cars in the transmission and it is fair to say that the use of ball bearings in transmission is becoming rapidly into favor.

Yet take such a splendid car as the Locomobile and no ball bearings are found, the perfectly successful arrangement for some years being shafts of hardened steel revolving in well lubricated bronze bearings, no trouble of any kind having been experienced and long life in the bearings being the outcome of the practice.

In connection with the transmission it may be well to mention that several of the cars have been provided with flanged couplings in the shafts between the transmission and the clutch, so as to allow of removal of the transmission without disturbing the clutch and vice versa.

Haynes adopted for his car last year a roller bevel gear drive and continues it this year, having had such good success with it. He exhibits a gear which has been driven 5,000 miles and no wear is noticeable. In addition to this a form of torsion rod is used on the Haynes car that is the only one of its kind in the Show, consisting of a rigid rod screwed into the bevel gear box nearly vertical and engaging with rollers on a cross bar on the frame, free to move up and down, but absolutely preventing all torsional movement of the rear axle. The rollers are large and the torsion rod is ample in area, the result being that this arrangement is giving perfect satisfaction. On the Peerless car is found an eccentric on the fan pulley, as a means of taking up any looseness of the fan belt. The Peerless car is also supplied with full pan protection under its engine and transmission.

Control.

The variety of engine controls exhibited covers the whole possible range. The simplest form is that illustrated by the two cylinder Knox car where one lever opens the throttle simultaneously with the advance of spark, there being but one lever that controls the engine, with no governor on the engine to assist or any other means of control.

The next in point of simplicity is the

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separation of the spark from the throttle and the use of two levers. one throttle and one spark control. These are found on top of the wheel and at the side of the steering post, then again with the throttle only on the wheel and the spark elsewhere, all without any governor. Then, in addition to this control, comes an additional foot pedal to be be used in emergencies, where the hands are not free because of difficult steering, to control the engine entirely independent of the hand lever.

Finally, there is the motor with a governor having a variable spring tension, so that the speed of the engine may be set at any given number of revolutions per minute within its range, such as is found on the Locomobile, the Columbia and the Pierce. Both of these are accompanied by foot pedals for accelerating purposes, and for use about town where the traffic is congested and the hands are busy with the steering wheel.

Many of the cars have adopted the plan of placing their control levers on top of the steering post, and not moving with the wheel, but always remaining stationary with the idea that the hand instinctively finds them regardless of the position of the steering wheel.

The small Columbia car has a new control consisting of the governor operating a separate throttle in the carburetter of its own, and the foot accelerator, another throttle entirely independent of the governor throttle. This avoids all complicated interlocking devices between the foot accelerator and the governor. The governor holds the car at any speed, and even though the accelerator may be used temporarily, as soon as it is released the speed of the car returns to where the governor was left last.

Thoroughness in the construction, accuracy and positive behavior of these controls are found in the accurate machine work used and replacing the former means of wires and carelessly constructed rods. Take the Haynes car, for example, which has at the bottom of the steering post nicely cut bevel gears transmitting the motion to the throttle and to the spark advance without a chance for lost motion in any way.

The Pierce-Arrow and the Thomas car are equipped with very painstaking devices to insure accuracy of movement; in fact there has been an improvement all along the line in these nice little details which contribute so much to the certainty of control.

The use of governors is certainly not on the increase, but those advocating the governor last year have adhered to it this year, only improving the details of the mechanism.

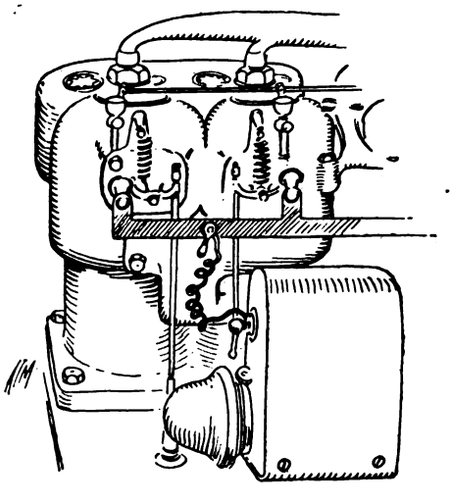
The governor spring of the Mark 46 Columbia car is most ingenious being entirely independent of the governor itself and yet controlling it to a nicety. It consists of a number of flat leaf springs which build up one on the other as required when higher speed is desired.

In connection with the Elmore control and their two cycle motors will be found as a part of it a device for cutting out one or more cylinders at a time, both as to spark and gas. For example, running about town where little power is wanted, any number of the four cylinders may be entirely cut out and the remainder used without any loss of gasolene. This is not possible without serious complication with the four cycle motor.

The increase of electric cutouts is noticeable, a button being supplied on the wheel which stops ignition for the time being, the cylinders continuing, however, to pump gas through them without exploding.

Ignition.

Compared with last season the ignition problem has undergone considerable change. Up to this year the magneto has



COLUMBIA ONE-PIECE IGNITION CONNECTION.

been very little in evidence. This year it has come to the front very fast in its various forms. The Electric Vehicle Company have adopted the simplest form, doing away at once with the complicated wiring, spark coils, commutator boxes, high tension currents and ill-behaving spark plugs. This is true also of the Locomobile Company, who used the same thing last year.

Another variety is the low tension magneto coupled with spark coil and therefore secondary current and spark plugs, then comes the high tension magneto, and finally the old standby, as far as the United States in concerned, of batteries working through spark coils.

All these systems are pretty evenly distributed in their various combinations, but there is no use talking; the simplest looking thing is, after all, the low tension current with the simple make and brake mechanism adopted by the two concerns mentioned.

The question will naturally occur—How about the certainty of this low tension current? The best reply possible to make is that it has worked for a year on the Locomobile product and that it has worked for longer than that on foreign machines, and the thorough testing out given it by the companies using it demonstrates that it is working out for them successfully. A hot large spark results which means instantaneous firing of the charge that otherwise might not ignite with a small spark.

One form of supply of electricity is badly overlooked, or rather the application of one form. It is well known that most cars using the dry battery are supplied with two sets of four or two sets of five, with a switch to throw from one to the other when one set is exhausted—they have the voltage and amperage of four or five cells, and the length of life permissible by such a volume.

Years ago the Columbia cars were supplied with twenty-five dry batteries in multiples of five connected in series, giving a voltage of five cells and the amperage of twenty-five. This means that each individual cell was drawn on at any given amount to an exceedingly small degree, so small that its life was lengthened up to a point where it would last as long as though it were not in use at all; in fact, the dry cell under this system dies of old age and not of use. Moreover, at the end of a two hundred mile run, with this system of using batteries, they are just as strong as for a one mile run, not being in the least drawn down or exhausted. It may be asked, "What will be done if they do run down? "You have no extra one on which to switch over." . But such questioners forget that the life of such a series of batteries is measured in months and not miles, and that with ordinary good luck a set of batteries such as described will last the season without thought or attention. The increased cost at first is a little greater ($2 or $3), but the decrease of annoyance is infinitely great and people who try this system find that ignition troubles almost cease in connection with them.

Exhaust System.

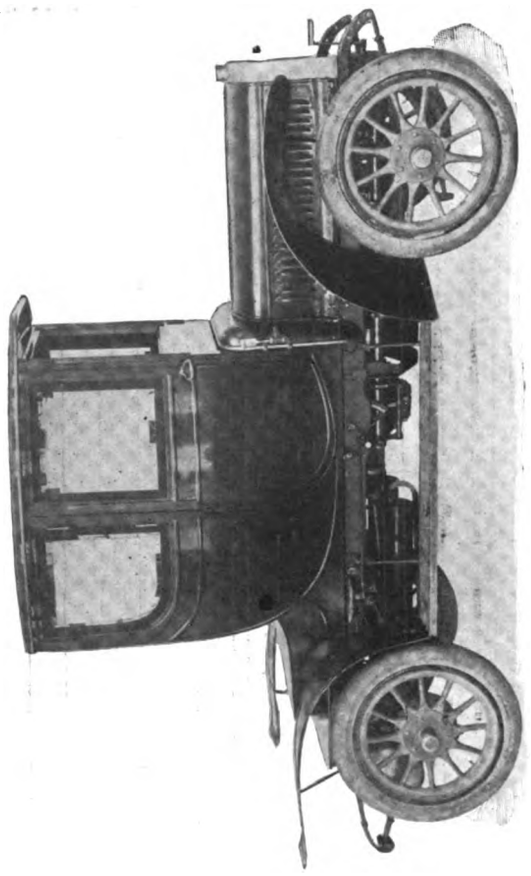
Greater care and substantiality in the construction of exhaust systems is the general rule, larger diameter of exhaust pipes and manifolds are numerous. Tubes leading to expansion chambers with long straight runs, free from elbows, are noticeable and numerous. All this kind of improvement leads to more rapid cooling of exhaust gases and consequent gain in power and lessening of noise.

The mufflers this year are generally simpler, and this problem has been so thoroughly worked out that little or no noise from the engines is heard. It is gratifying to learn, too, that all this has been accomplished without increase of back pressure and consequently diminishing of power.

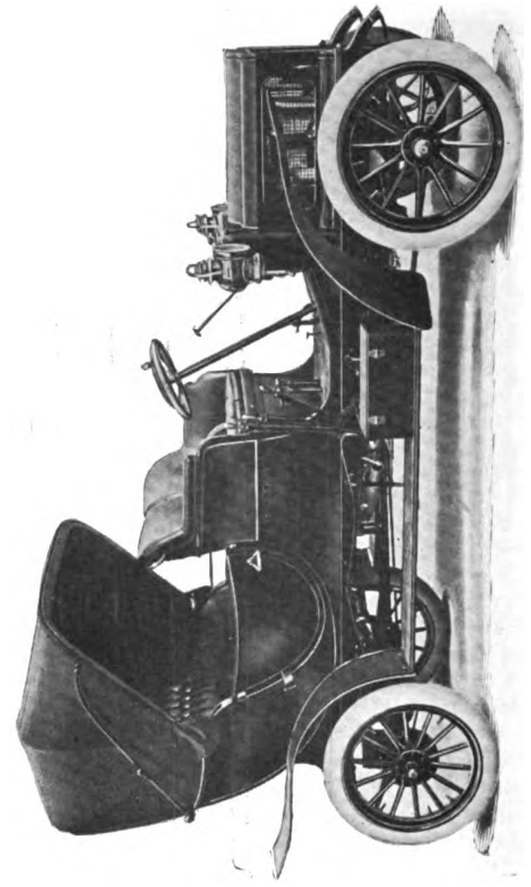
Cutouts are furnished by some makers solely for the purpose of being able to note the sound of explosions and to detect any irregularity in the explosions, and these cutouts are more carefully located and better constructed, some of them so arranged that even with the cutout open the exhaust finds its exit from the same opening as when the entire muffler is in service. No flame is visible, which is a distinct improvement. The former practice existing in

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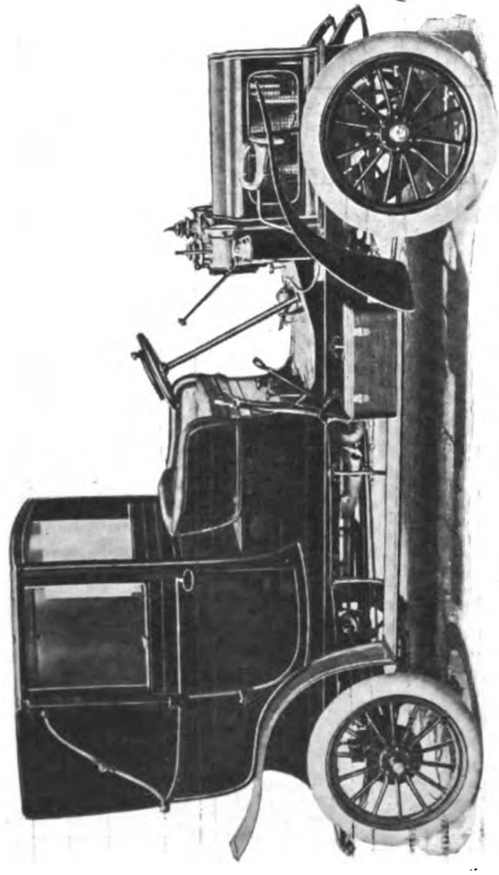
Types of Closed Cars



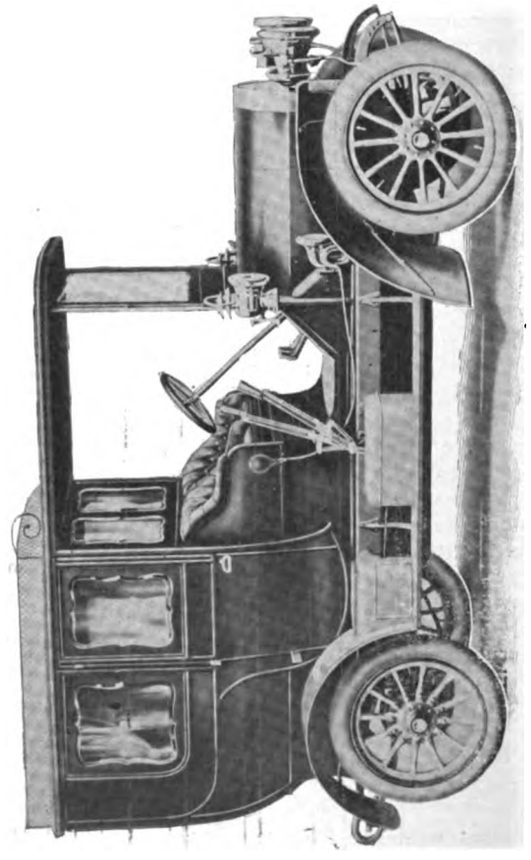
CADILLAC COUPE.



WHITE IMPERIAL VICTORIA.



WHITE LANDAULET.



KNOX LIMOUSINE.

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many cars of pointing the exhaust toward the ground and stirring up the dust has been gradually eliminated. As a rule, the outlet of the pipe being horizontal, or nearly so, so as to shoot the gas directly backward.

Shunts from the exhaust are found leading to gasolene tank to furnish pressure to force the gasolene to the carburetters situated above them, to the jackets around carburetters and to the tops of oil feed tanks.

In the Knox car the exhaust gases are filtered before they are allowed to pass toward the gasolene tank to furnish pressure. The filter is easily accessible and easily cleaned, which does away with some of the troubles found with the clogging of passages and the loss of gasolene and consequent stopping of the motor because of it.

Pressure regulators are introduced to so regulate it as to blow off when the pressure exceeds the required amount of a pound or two per square inch.

Axles.

No more radical departure is met in anything than in the character of the axles. I beam sections have been adopted almost universally in one shape or another for the expensive cars and for some of the cheaper cars, too. A most gratifying increase in the solidity of this important part has been brought about. Nearly all front axles are dropped either by a gradual curve from end to end or between spring perches.

Generous steering knuckles and correspondingly generous wheel pivots in front and steering arms are to be seen everywhere. Many such axles are forged in one piece in most extensive drop dies, something that would not have been dreamed of because of the expense a few years ago. Rear axles are of I beam construction, too, and just as strong and substantial in appearance.

It is safe to say that there will be nothing more gratifying to the prospective purchaser than this splendid advance and generosity of dimensions at this point.

With the improvement in design has come a corresponding improvement in material and it is common and usual to find in these axles material from 100,000 to 200,000 pounds per square inch tensile strength, whereas last year and years previous 60,000, 70,000 and 80,000 pounds per square inch tensile strength was the limit.

In connection with the rear axle of bevel gear cars there is the same variety of construction as last year, some carrying the weight of the car on the driving axle, others carrying the weight of the car on the exterior tube and driving the outer end of the hub by a positive clutch.

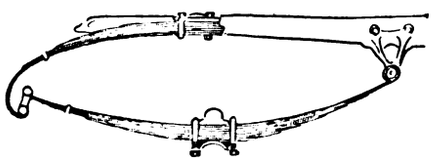
Better materials have been brought into use here, too, and although the size of some of the driving shafts is smaller the strength is greater.

In connection with this axle problem it must not be forgotten that the gain in strength is fourfold because of the double gain of increase in size and increase in strength of the material used. The makers may have gone to the extreme in this matter, but it is well that they should.

Springs.

Every possible variety of spring is found among the different exhibits, but of course the prevailing one is the semi-elliptic front and rear, some with the cross spring behind and some not. Nearly all have adopted in connection with such springs fixed attachments with the frame at the front end and swinging shackle at the rear. This, of course, is dead right, the idea being that the axle should be drawn ahead rather than pushed ahead. Next in popularity is the semi-elliptical spring in front with the full behind, coupled with strut rods.

Adherents are found to four full elliptical springs, but they are in the minority. Then comes the modification found on two or three cars, of the three-quarter spring, the lower half being arranged like the semi-elliptical but engaging either at the rear or front with aquarter elliptical spring. It might be better and more clearly explained by saying that the forging attached to the frame and engaging with the spring has been supplanted by part of a spring.



CADILLAC DEMI-PINCÉTTE SPRING.

In years past the Packard car has always used a cross spring on the front axle, it being held in line by two generous strut rods. This year that has disappeared and give place to the usual type of semi-elliptic spring.

On one of the foreign cars exhibited the makers have raised the rear end of their frame to accommodate a cross platform spring. This is a noteworthy point, inasmuch as it affects the shape of the frame and the body as well.

As to design, however, distinctly longer springs are found. No one can say that as generous proportions are not found now among the high-priced American cars as among any cars in the world.

Shock absorbers are gaining ground without a doubt. Rubber bumpers as a part of the regular equipment of the cars are on the increase, as a tribute probably to the awful conditions of some of our American roads, and the fact that no spring can fully compensate for the bumps found by the ordinary tourist, and of course it is much better that the blows should fall on rubber than on metal.

Bearings.

Bearings are an important feature in an automobile and have received no end of study. The result shows a variety of opinion as to the right bearings. It is safe to say, however, that anti-friction bearings are increasing in favor in one form or another. Just now the Hess-Bright bearing is in high favor. Many makers show it as part of their regular equipment, using it in the transmission and wheels. The Timken roller bearing is another extremely popular one for use about bevel gear housings and on wheel bearings. The older forms of ball bearings are found in many of the cars, consisting of the well rounded cone and cup used in connection with a generous diameter ball. Whatever bearing is found shows a decided tendency toward larger dimensions, which is by all means desirable. Engineers do not fear appearances in the matter of bearings as much as they did and do not hesitate to make a large hub or other container for ample sized bearings whenever it is found necessary or wherever it is mechanically possible.

Frames.

It is safe to say that the pressed steel frame has the call. There are exceptions, and worthy ones, but, as a rule, the regulation channel shape with the smooth exterior and the two flanges extending inward is used, cross members being of a similar shape. Good, generous gusset plates at the corners of the frames, and, better yet, with the Packard the side member is enlarged in the neighborhood of the gusset, giving generous rivetting surfaces and increased stiffness.

Lightening the frames by resorting to cutting out circles of metal is noticeable in several cars. The frames are of splendid shape and design, some having straight side members from extreme front to rear, many brought in under the dash with several inches of inset.

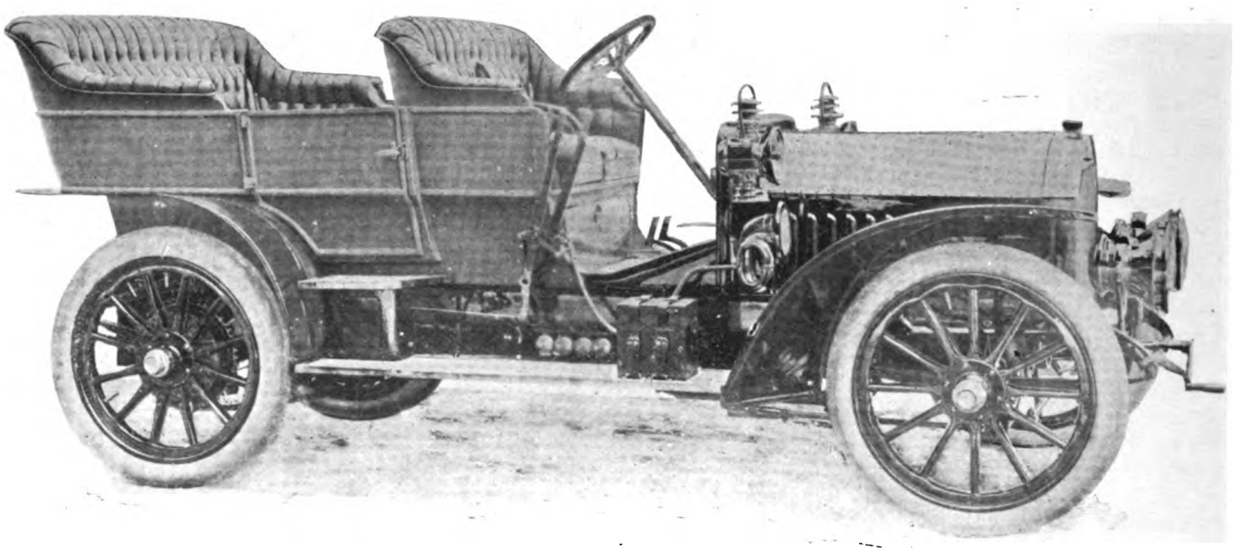
The depth and dimensions of the frame are not very different although it is seen that one or two makers are using rather thinner metal, and rather narrower flanges and must be approaching the limit of safety as far as strength is concerned with the material now available for frames that can be struck up cold, as these frames are.

Reinforces of various kinds are seen; for example, the Haynes people have filled the channel iron inside with a hickory elm at a point extending from opposite the transmission to the front end of the side members.

The Stearns, Apperson and Thomas truss their frames from a point about opposite the rear end of the transmission to a point about the middle of the engine or thereabouts. This truss consists of two rods tied at the ends and suported by a strut at or near the middle of the rod. This is a step in the right direction inasmuch as frames of deeper section are practically out of the question.

In the new four cylinder Olds is found a frame which may be called a double frame in its forward half; that is, there are two side members extending from the rear of the transmission to the front of the engine, the interior side members being practically the same in size and depth as the outside members. Moreover, these dupli-

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COLUMBIA, MARK LXVII, 40-45 HORSEPOWER, $4500.

cate side members are tied together at the bottom with a thin sheet steel plate, giving an exceedingly rigid frame throughout this forward and critical part of the frame. The swaying of the car on rough roads at high speed will certainly not cause serious distortion at this point.

The Pope-Toledo still adhere to their inverted "U" frame, which has given them so much satisfaction, there being in it only a little change of design to accommodate the change in other features about the car.

The Autocar adheres to their composite structure, consisting of a very narrow and light channel iron pressed steel frame on the inside bolted to an exterior frame of wood. This makes an exceedingly rigid and serviceable structure, carrying out the ideas used in composite light built racing yachts and some of the high speed steam launches. This composite structure possesses features of stiffness and resilience practically out of the question with simple steel.

Angle iron frames are found on some of the first-rate smaller cars. Some of these frames are reinforced with wood and some are not.

In the frame forgings for attaching the springs, however, is found a decided change in the way of increased strength and lengthening out of the forgings made necessary by lengthened springs. Moreover, these forgings are neater, better in design and with considerable thought given to graceful appearance and form.

The Cadillac on their large car adhere to the tubular sub-frame supporting the engine, having found it a most rigid and light means of support.

Several of the frames show large steel pans underneath the engine and fly-wheel firmly riveted to the frame and really supporting it to some degree against side strains, combining this function with that of keeping the delicate motor and mechanism free from dirt as far as possible.

In the Franklin exhibit is seen a frame almost entirely of wood and one that has given satisfaction now for several seasons.

The Pope-Hartford two-cylinder frame is entirely of wood and the Pope-Hartford four-cylinder frame is of composite construction, being reinforced wood with flat steel plates. This last construction is bound to give most excellent results.

Details.

There are a number of little details not possible to classify that are well worthy of mention; features not absolutely essentian to the existence and proper operation of a car, but contributing to a greater or less extent to the convenience of or possibly accomplishing some function in a clever way.

Take for example the Northern new four-cylinder car. Here the gears at the front end of the engine driving the secondary shaft that operates the valves are encased in a manner to make them watertight and are made to pump the water of circulation for the engine—a double function, consisting of a good set of gears and a good gear pump in one.

In this same exhibit is the combination of a lamp bracket and fender iron that is worthy of mention and extended use. The front fender iron is made of a substantial character and supports the fender and at the same time the large gas lamps. This takes the lamps out of the way of the cranking mechanism of the car which has been seriously narrowed in some instances by big lamps. It puts the big gas lamps directly over the wheel so that the light is in front of the wheel track that is to be, and it is also out of the mud, advantages every one of them worth having. This scores another double function for the Northern exhibit.

In the Knox four-cylinder, the gasolene tank is under the body and a large pipe is brought forward so that its opening for filling is under the front foot-board. A magnetic indicator is used in the gasolene tank, which shows at a glance whether or not the tank is full.

On the Fiat car the gasolene tank opening is of a very substantial character and is so formed as to be its own funnel; not a very large one, to be sure, but one that could be nicely used in the absence of a better one. And also on the Fiat car is a most excellent scheme—that of supporting the radiator on trunnions, so that no weaving action in the frame of the car can possibly strain the radiator and cause leaks.

The materials entering into the cars are variously distributed as to quality, each maker according to his own fancy. Many use aluminum alloys for their engine base and engine supports; perhaps it is safe to say that most of the engines have aluminum bases and transmission cases. Others, like the Locomobile, prefer manganese bronze, with its greater strength, also greater weight for these parts, others malleable iron.

The quality of steel used has been greatly improved during the last season, no effort being spared to get what is good. Tensile strength per square inch have risen as high as 150,000 pounds and 200,000 pounds, as compared with the strength of ordinary steels not exceeding 100,000 pounds in common use during previous years. This means greatly increased expense about the machine shop, necessitates the use of the highest priced tool steel to cut such materials and, also, necessitates expensive methods of heat treatment and annealing and tempering operations, but the results obtained are worth it all.

The use of castings is on the decrease, either steel or malleable iron and the use of forgings on the increase. Take for example the little Pope-Tribune, two-cylinder, selling for $900. It has within its makeup dozens of drop forgings. Examine the exhibit of the Packard, showing the wrought forgings used by them, and it is immedi-

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ately seen what an extensive part they play in the construction of the Packard car.

When it is considered that the forgings are made of steel having at least a tensile strength of 60,000 or 70,000 pounds per square inch, and may be made of such good materials as to have a strength of three times that, as compared with the maximum strength of the strongest steel casting at 70,000 or 80,000 pounds, coupled with the uncertainties of blow-holes and undiscoverable defects that may exist in castings, the policy of using forgings is most wise.

In the old days of the bicycle, every possible device was resorted to in order to bring the chain pull over between the ball bearings. In the Thomas car this principle is found carried out to a nicety, the ball bearings being directly under the front sprocket and the chain pull on the axle being between the ball bearings.

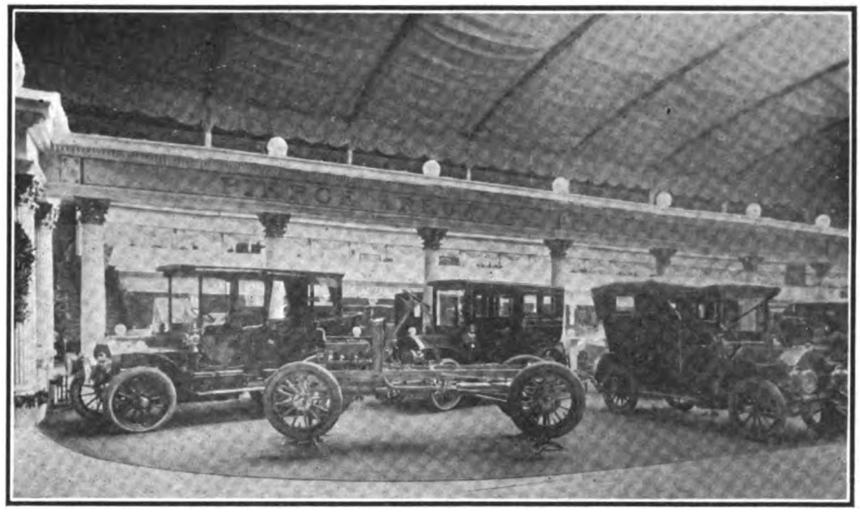
To show the thoroughness of the Thomas construction throughout it is found in their exhibit that there are 222 drop forgings entering into the construction of their car. Another clever little detail of the Thomas car is found in the easy removal of the commutator in case it needs cleaning or wiping out, which is a desirable thing to do once in a while. It is on the dash in plain sight and within easy reach. Removing two screws allow it to be taken off and put back. It goes back as it came off because it can only be put on in just one way, because of a little detail in construction.

On the Locomobile car is found something which exists nowhere else apparently, and that is that the thrust collar and the clutch operating mechanism is within the gear box and therefore copiously lubricated by the flood of oil always present in gear boxes. This makes the gear box a little longer, but insures everlasting moving parts as far as the clutch is concerned.

On several of the cars, notably the Columbia and Stearns, are found an aluminum tread for the running boards and footboards. It is light and strong and always clean and has every appearance of being rubber and probably the majority of observers think that it is rubber.

The Pope-Hartford four-cylinder car has adopted a most efficient means of water circulation, the water being forced into the top of the cylinder around the valves by pump and also being taken out of the top, thus insuring the coldest water in the neighborhood of the valves and around the explosion chamber and at the same time keeping the body of the cylinder warm, in all probability at the boiling point, which certainly contributes very largely to the efficiency of the motor.

The two-cylinder Buick motor remains just about as it was. Some refinement has been introduced in the oiling system and in carrying a tremendous gasolene supply under the bonnet to the amount of 16 gallons. The radiator is much larger and has been given the outward appearance of those used by regular four-cylinder cars, very much



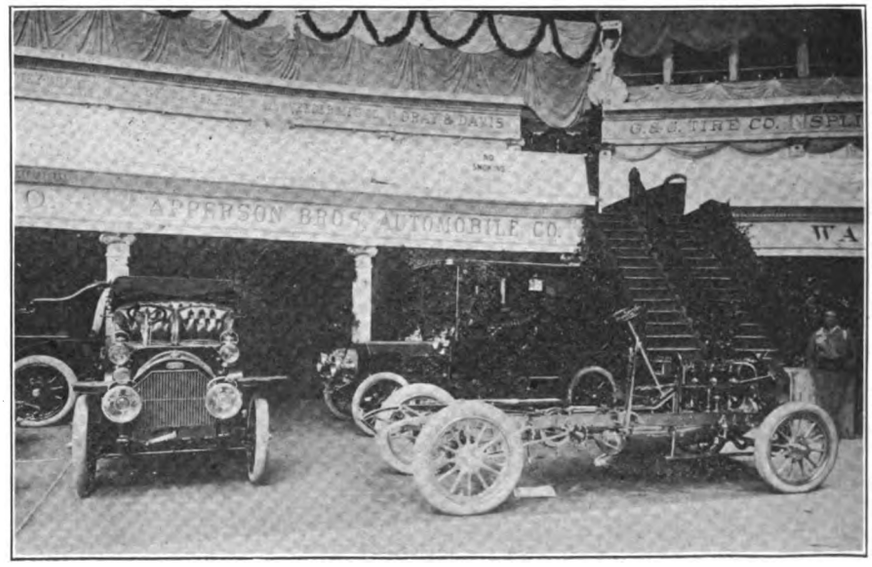
to the improvement of the car and adding much to the cooling capacity.

About the only exception to the general rule of the accepted crank as a starting device is that shown by the Northern, which is a lever and ratchet, so arranged that the engine is pulled over easily by a lever located just in front of the radiator. Incidentally, a safety device is added, whose function it is to retard the spark to zero point, that is, so that the explosion does not come before the piston has reached the top of the stroke, in case the spark has been left advanced. This is very cleverly worked out.

Out in the street, however, there is a car being demonstrated that has the same starting device brought out last year and shown in the basement, consisting of a heavy spring wound up by the action of the engine and left locked always ready for use, all that was necessary to operate it being to trip the spring, which had length enough to spin the engine for a fraction of a minute, thus starting it and then immediately winding it up again. This seems to work very nicely and takes up about as much room as a good-sized straw hat on the end of the crank shaft, the latter protruding so that in case of accident the starting crank might be used.

A little detail noticeable on French cars, notably the Clement-Bayard and Rochet-Schneider, is the way the fans on the rear of the radiator are placed. It is extremely noticeable that the amount of clearance between the cutting edge of the fan and the back of the radiator is extremely small, that the fans have a peculiar curve on a straight blade. This disposition of the fan is so radically different as to indicate an extremely good reason for so placing it. It certainly must do away with all eddies between the fan and the radiator, and must pull the wind through the radiator most efficiently. This is a marked contrast with the careless location of many of the other fans in the Show which seem to have been placed by chance or accident and very little thought given to any real efficiency.

Several of the machines are supplied with a convenient little device in the shape of a pointer on the back of the rear cylinder against which marks on the fly wheel are



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placed to indicate the opening of the inlet or the closing of the exhaust and all necessary details in regard to valve timing; all this in case during repair the valve timing is upset, that it may be accurately returned to the predetermined and correct timing.

One of the talking points dwelt upon heavily by the Northern people is the fact that they are galvanizing their cylinders to accomplish several things. In the first place the cylinders are being heated before galvanizing, and during galvanizing they are annealed and all internal strains drawn before machining, then in case all sand and grit has not been removed from the water jacket inside and out even with the utmost care, or in case there may exist a pin hole in the casting at some point, the galvanizing flows into it, covers and fills the pin holes and holds the sand. In this way all sand troubles about the crank case or in the pumps is avoided, and defective cylinders are rendered practically impossible. Any defect too large to be cured by this process is liable to be detected by superficial inspection.

One detail adopted on the larger Pope cars, however, and the only one seen in the show, at least among the American cars, is the auxiliary five-gallon gasolene tank located at the top of the dash and within it, thus giving gravity feed to the carburetter at all times, no matter how steep may be the hill or low the gasolene supply. The bulk of the gasolene is carried, however, in a large tank at the rear of the chassis, the gasolene being forced from the large tank into the smaller one by air pressure. This is a very happy solution of the gasolene supply problem and one which is pretty sure to find favor because of the simplicity following gravity feed and the practical manner by which it is obtained. Ball bearings were used last year on the Pope-Toledo and are used this year somewhat larger in dimensions, however, and therefore extremely efficient. The double chain drive is retained as a special taking point of the Toledo factory.

The wiring of the high-tension devices on the Royal is worthy of remark. The commutator is of suitable design permitting of no ground wiring completes the circuit, thus controlling the flow of electricity to the highest degree.

On the Studebaker the muffler has two exhaust ports pointed backward and a little outward at an angle of 45 degrees with all the area of breaking the vacuum that ordinarily follows a rapidly moving car. The idea is nicely worked out and makes a very attractive exhaust arrangement. The exhaust from each cylinder is carried down the engine base before it joins the manifold.

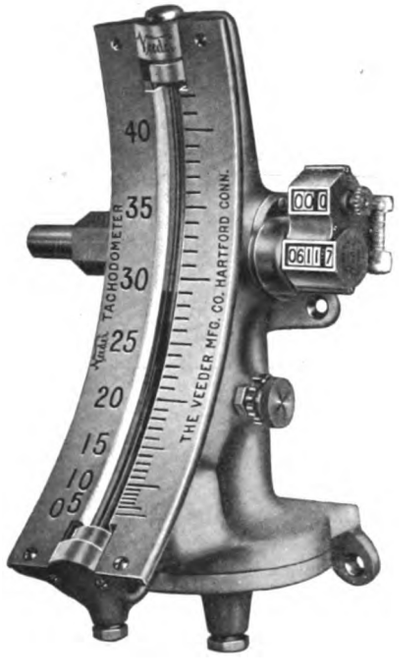
In the Studebaker are probably the only bearings of the kind in the Show. They are of the plain journal type, but the marked characteristic is the fact that both turning and standing member are hardened and ground, oil being furnished by ring oilers.

HENRY SOUTHER.

Accessories

Speed Indicators.

Marked improvements are apparent in the numerous speed indicators which are exhibited. The Warner Auto-Meter, made and marketed by the Warner Instrument Co., Beloit, Wis., is one that has undergone several changes, though not of the character to make the instrument undistinguishable from last year's model. The size of the speed dial and also of the trip and total mileage dials has been increased, the enlargement naturally making the register easier to read from the seat. The casing at the base of the meter around the flexible shaft has been lengthened, giving greater strength. A flexible shaft connects the worm gear in the instrument to the bevel gear on the wheel. Its principle remains unchanged. A magnet revolving freely on sapphire bearings is its power. The indicating dial is suspended in front of the magnet and a partition separates them, precluding the possibility of affectation by air. The dial is mounted on a pivot. A hair spring holds the dial to zero point and the magnet, when revolving, has a tendency to draw the dial in the direction of its revolution, while the hair spring opposes its tendency. The greater rapidity of the magnet's revolution, the greater the displacement of the dial, and when the speed of the magnet doubles, the displacement is doubled.



VEEDER TACHODOMETER.

In principle and general construction this year's Jones speedometer-odometer is not essentially different from last year's models, although several minor improvements have been made to record the total mileage, irrespective of the direction of motion. Thus a car which in the course of a day covers 100 miles forward and five backward, will record 105 miles. The advantage is that the entire mileage adds up and also makes it is impossible for a chauffeur to jack up the wheel and industriously unwind the result if his night's clandestine performance. The addition of a trip mileage dial, similar to that employed on the Jones odometer, is an innovation on the 1906 speedometer-odometer. In this regard a noteworthy point is that the setback mechanism, instead of being actuated by a thumb screw and a motion analagous to that of winding a clock, is now instantly operated by a push button, which resets the indicator at zero, as in a stop watch. A new instrument which is being exploited by Jones is the Jones tachometer, for indicating the revolutions per minute of engines and machinery. It is based upon the same principle—centrifugal force—and containing the same movement as the Jones speedometer. The tachometer has a four-inch dial, a heavy standard and small pulley wheel one and one-half inches in diameter. The instrument is adjustable and will face at any angle. The belt driven instruments, operated from the engine shaft, are made in two models—Model A, indicating up to 1,200 revolutions per minute, to be geared 2 to 1; Model B, indicating up to 600 revolutions per minute, to be geared 4 to 1. The gear tachometers are also furnished in two models, C and D, indicating respectively up to 1,200 and 600 revolutions per minute.

Quite a notable feature of the 1906 Webb indicator is the addition of a total mileage and a trip mileage recorder and dial. The principle involved in the Webb speed indicator is not new, being that of holding a feather in the air with your breath. It is constructed with a taper bore and an aluminum wire or index weighing five grains which rises or falls in proportion to the air created by the air pump, which is driven by a flexible shaft over the knuckle of the front wheel. The indicator on the right represents the total mileage to 10,000 and repeats; the trip registers to 100 miles and repeats or it can be set to any mileage by pressing the button and turning.

On the new Veeder tachodometer this year the speed register is curved, the claim being put forth that the scale is easier to read from the driver's seat and its value has increased by adding a total and trip mileage odometer. There is, theoretically, only one moving part in the Veeder tachodometer, i. e. the small paddle wheel in the centrifugal pump which is geared direct to a front wheel of the car. It works some-

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what on the order of the thermometer, the revolutions of the paddle wheel forcing the colored alcohol up the indicator tube. The various Veeder odometers are, of course, displayed.

Post & Lester, of Hartford, exhibit the Bullard speed recorder, a combined clock odometer and speed recording instrument, the latter marking on a round card every mile traveled, the speed per hour and stops. A flexible shaft connects the instrument to the wheel of the car. Something very similar is being exploited by the Baldwin Chain and Mfg. Co., or, at least, will be shown by them as soon as it is ready to be marketed, which is promised for the Boston show. It is the Monitor speed recorder, which has been adopted by the United States Government for warships and other steam ships. In addition to being an electrical speed recorder it indicates the speed per hour, gives total mileage and trip mileage or counts revolutions of the engine per minute. An electrically regulated arm, the end of which contains a marking fluid, records on a graduated cardboard disk the speed at a certain mile and to the minute; also recording the time of stops. While the device shown by the Baldwin people is the type designed for nautical use, they state that a smaller instrument designed for automobiles is now completing six months of hard test and will be shown for the first time at the Boston show in March. It will be marketed for about the same price as the various speed indicators now in use.

Sibley & Pitman, New York City, have a new speedometer and odometer which they claim will fit any car by the substitution of the small gear on the end of the flexible shaft which is fastened by a cotter pin. A dealer may therefore carry a stock with a few extra gears and fit any car on the market. The Motor Car Specialty Co., of Trenton, N. J., through its agent, Wm. S. Jones, of Philadelphia, in addition to the Lea tire pump are showing a new instrument which they have named the Lea Speedistometer. It has no new features. The McGiehan line of speedometers and odometers remain practically unchanged. The Weed Chain Tire Grip Co. display the Lashar electrical speed indicator, an ingenious device which works entirely by electricity.

Lamps.

There are practically no radically new features apparent in the exhibits of lamps. All the well-known makers have improved old or added new models to their lines and have seemingly designed upon the principle that simplicity is beauty in itself. Generators have come in for their share of attention, the idea being to make them as simple of operation as possible and to minimize the waste of carbide, at the same time increasing the efficiency and power of the produced gas. One of the newest generators is that produced by the Rose Mfg. Company—the Neverout patent invertible gas producer. It is entirely automatic in action and swings on an axial bracket, a half revolution of the device starting the generation of gas and vice versa. It is constructed on a different principle from that of the ordinary gas generator. The carbide container is a metallic cylinder with plain surfaces. When the gas is turned off the water is at the some time automatically turned off. Conversely when the gas is turned on the water and carbide are brought into contact. It is made in two types, with single and double cylinders, respectively. It goes without saying that the Neverout lamps also bear evidence of the touch of the refining hand.

Simplicity and effectiveness also are apparent in the generators of the Atwood Mfg. Co. and the Badger Brass Co. On the theory that water cooling will eliminate the dirty residue of decomposed carbide, thus reducing the burned carbon to dry ash or dust, instead of the dirty ill-smelling refuse, so common in most ordinary generators, have these been constructed. Both the Solar and the Atwood generators are made in two sizes, the shape of the two makes differing, the former being cylindrical. Although the Solar parabola projectors, a combination of ground and polished plano convex lenses in front of short focus, surrounded by a German silver reflector, which is a section of parabola and a spherical rear silver reflector, were first introduced last season, several new types are this year exhibited. The Solar square oil and the Duplex oil side lamps are new styles. The Atwood Company also presents several new lamps, conspicuous among which are the No. 21 swivel gas searchlight, Nos. 9 and 12 diamond-back shaped gas headlights, with parabola lenses and a new diamond backed oil lamp.

New Dietz models include an oil lamp in two sizes with corrugated ruby backs and side oil lamps with small side lights, to throw light on the running board of the car or on the curb. The famous Bullet lamps of Gray & Davis call forth favorable comment, as they usually do. The C. T. Ham Mfg. Co., Rochester, N. Y., have an interesting exhibit of their "cold blast oil lamps," and are featuring the Tourist, a side lamp with a semaphoric optical flint lens. The well-known Twentieth Century and Rushmore lines remain practically the same, excepting, of course, refinement in minor details.

In connection with lamps, one of the brand new things, although the embodiment of an old idea, is the Imperial-Lyon automatic lamp adjuster, made and shown by the Imperial Brass Mfg. Co., of Chicago. This lamp adjustor bracket is operated by the steering knuckle rod to which it is attached. It causes the lamp to move with the wheels, so that before the body of the car swings around the driver is able to determine the lay of the land around the bend. It can be adjusted to automatically turn as fast or faster than the wheels. Charles E. Miller is also showing the Rand adjustable bracket.

Horns.

While last year's Gabriel two-chime horn somewhat suggested a pipe organ, the new eight chime horn certainly approaches nearer to that instrument than anything heretofore attempted. Like its predecessors it is the invention of C. H. Foster, and is manufactured by the Gabriel Horn and Mfg. Co., of Cleveland, Ohio. The eight chime horn consists of eight tubes, each giving a clear musical note. Like all other Gabriel horns it is operated by the exhaust and it is claimed for the new eight note instrument that any tune within the scope of one octave can be played upon it by simply placing the foot on the exhaust pedal and working the keyboard like a piano. A. H. Funke, New York, has a line of new bulb horns, but they are very similar to the accepted type of reed instruments, with the exception of the eight toned bugle horn. The Motor Car Equipment Co., New York, is howing a new French siren horn operated by means of a flexible steel shaft keyed to a leather pulley which comes in contact with the engine fly-wheel by pressing a small pedal. The same firm also has a triple tube chime horn which connects with the engine exhaust. Charles E. Miller's line of horns on exhibition are so numerous that to particularize would be difficult. Two of his features in this line, however, are the Miller imported combination siren horn, operated by a roller on the fly-wheel connected by a flexible shaft to the horn, and the Miller electric horn.

Shock Absorbers.

In shock absorbers there is an imposing array of all kinds, actuated by all principles. The best known perhaps, the Truffault-Hartford Suspension, made by the Hartford Suspension Co., of New York City, has been materially strengthened by making the centre arm double instead of single as heretofore. The center stud and steel washers are hardened—the latter provided with five prongs to take up lost motion caused by wear. This improved locking facility provides for easy adjustment and entirely eliminates the former check nut and binder screws. One of the new shock absorbers is the Baldwin spring recoil check, manufactured by the Baldwin Chain and Mfg. Co., under the House patents. Its construction is of the most simple form of automatic grip. A steel shell or case with a supporting eye on the top is hooked to the floor or frame of the car body. Inside this cylinder is a divided piston covered with oil-treated leather which contacts with the sides of the hollow case, a set of toggle arms butt against each side of the piston segments and a yoke over the top drawing thew down is attached to the axle by a strap. Thus when the jerk upon the yoke bolt is increased in velocity the friction upon the sides is multiplied by the square of the velocity springs in the cylinder returning the piston to its normal position after every action of the checks. The Gab-

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riel Company not only makes horns, but have turned their attention to the matter of reducing shock which has resulted in the appearance of the Foster shock absorber, a neat and effective looking device. The Foster consists of a hollow steel cylinder which contains the piston, oil furnishing the force of resistance. The plunger head contains a circle of valves and when a shock sends the plunger down the oil flows through these holes into the upper chamber. When the recoil comes the force of the oil presses against a washer around the piston rod which partly covers the valves, thus allowing the oil to flow back into the lower chamber, a small portion at a time, causing it to act as a cushion. The old equalizing spring idea to reduce jars has been brought out by J. H. Sager in the Sager equalizing springs, which are simple coil springs of the barrel pattern with an eye at each end. One end is fastened to the axle or the other part of the running gear, while the other end is fastened to the body or upper frame work.

Although there has been an amazing multiplication of accessories, there seems to be little that can be classed as brand new, that is, involving new ideas. Many new firms have entered the field with sundries, some of them firms who are taking up automobile specialties as a side line, and that it is proving a profitable venture there is small room for doubt. The exhibit of the well known exporter and importer, Charles E. Miller, is a sundry show in itself, his large stock embracing almost everything that has been devised for the needs of the automobile or its user. One of Miller's latest good things—and he is always presenting something of the sort—is a complete tool shop on wheels, designed for the man who would do his own repairing, or for the small garage keeper who finds it beyond his means to equip his shop with a large and expensive outfit on the strength of a few possible odd jobs. The "Automo" tool cabinet, as it is styled, has been designed to meet these exigencies, and that it will "take on" goes without saying. It consists of a substantial hardwood cabinet with a full complement of tool drawers, mounted on wheels so that it may be rolled through any doorway. It contains an electric drill with a motor that can be connected to an incandescent lamp socket, a combination anvil and surface block, a swivel machinist's vise, offset jaws and pipe vise, dies and taps for threading bolts, and nuts, chisels, saws, files, calipers, levellers, squares, hammers, nut and pipe wrenches, oil stone, metal saws, belt lacing outfit, wood and iron clamps, drills, files and all the other necessary tools which go to make a complete repair shop. Miller is also the American agent for the celebrated Brampton chains, and flattering letters of commendation from their users show how they are regarded. One of his novelties is an eight-day clock, which can be attached to the dashboard. The Miller mica spark plug does not differ in construction from the 1905 article, but he has added several foreign patents to his stock. Realizing that there would be an enormous demand for jewelry typical of the automobile and its component parts, Miller is showing an extensive line of watch fobs, buttons, pins, etc. His line of clocks is large, and the style of caps, gloves and gauntlets which he is showing are so varied as to make choosing difficult. In ignition apparatus, Miller's line embraces the types of all the leading makers, among which might be mentioned the Splitdorf plugs, timers, coils and distributors; the Witherbee storage battery igniter; the new Apple battery charger and automatic cutoff; the Herz timers, distributors and other ignition apparatus and the Kingston coils and plugs. He has also taken on the Janney-Steinmetz tanks, the Barrett jacks and the Wray pressure register and compound pumps, beside a varied assortment of lubricants and cleaning compounds.

E. J. Willis, another well known New York jobber, is showing the new Hopkins autolog, which gives the speed, both in miles and kilometres, speed and mileage for each separate mile, speed from 1 to 60 miles an hour and kilometre speed from 1 to 100 kilometres per hour, and the total mileage and kilometres per trip. His 1906 Yankee grade meter, which gives the grade going up or down at 40 per cent., has been perfected. Owing to a chemical used in its construction last year the dials became discolored, which defect, as well as other minor imperfections, have been overcome.

The New York Sporting Goods Co. has on display a large assortment of domestic and imported sundries.

Charles E. Splitdorf, the New York man who makes coils—and has been making them for years—has introduced a new ball bearing commutator, the spindle carrying the hardened steel plunger contact revolving upon steel balls in steel cones, which reduces the wear to a minimum, produces a perfect ground and absolutely prevents freezing in case of neglect in oiling, it is claimed. Another addition is a low tension magneto. The armature is of the Siemens shuttle type, which gives two sparks for each revolution. He also has a high tension magneto in the course of construction.

R. E. Hardy's 1906 line of Sta-Rite ignition plugs consists of six distinct types and forty-seven sizes. Although the Atwater-Kent new spark generator is given this name, it is rather misleading, as it is simply a mechanical vibrator and distributor. The mechanical vibrator has done away entirely with the timer, all magnetic vibrators and reduced to a small percentage battery consumption. The vibrator, being mechanical, is worked by the power of the engine and consumes no battery wear to move it as does an electrical vibrator. The new mechanical vibrator is designed to take the place of both the commutator and magnetic vibrator. In the distributor, or what they term the generator, the four secondary wires are led from the binding posts through the bottom of the box to the spark plugs. The two primary wires come from the bottom, one leading to the battery and the other to the ground. Contact is made directly from the secondary of the high tension coil to the longitudinal distributor. A shaft connected with the "two to one" shaft of the engine drives the distributor and also the mechanical vibrator, which is placed under cover on top of the box. An advancing lever moves the mechanical vibrator for advancing the spark. The current is led into and out of the mechanical vibrator by sliding contracts, which allows the advance and retard without the use of moving wires. A two-point switch allows the use of two sets of batteries if desired.

An automatic starter is displayed by the Auto Improvement Co. of New York City. It is simply a spring which is thrown into operation by a small release pedal and after starting the engine it is automatically rewound as soon as the engine has attained sufficient speed, and when fully wound is automatically disengaged, when it is ready for the next release. The same firm also shows a trip detector which is designed to protect the owner from the unauthorized use of his car. This instrument is a little case which can be attached to the dashboard, the pulsations of the engine setting in motion a balanced vibrator which registers a mark on a paper dial calibrated in miles. As this detector can be set in motion even though the car is not moving it is hardly likely that it will become popular.

Byrne, Kingston & Co., Kokomo, Ind., have created new carburetters, but in these the essential features do not differ materially from the previous well known models. The National Battery Co., Buffalo, N. Y., has a tastefully arranged display of their storage batteries.

The Briscoe Mfg. Co., Detroit, Mich., has gotten out a new film tube radiator, made up of thin copper tubes, 3½ inch by 1-16 inch, without fins, in which the water circulation is vertical. They have also added the hinge type hood and have designed a new malleable iron fender fastener. The factory has been equipped to make the popular concave curved metal dashes and a metal box for runabouts is a newcomer. The Whitelock Coil Pipe Co. is showing a line of steel and aluminum hoods in addition to its line of radiators.

New grease cups and spring key cocks are shown by the Lunkenheimer Co., who have made many improvements upon their force feed lubricators.

By rounding off the ends of the side pieces of chains less friction is created and the tendency to jump the sprockets is reduced to the minimum. This has been done by the Whitney Mfg. Co. in all their larger size chains, and in addition they have made several new chains—the No. 3, ¾ inch pitch; No. 7, 1 inch pitch; No. 12, 1¼ inch pitch, and No. 17, 1½ inch pitch. Other chains shown are the diamond and Baldwin makes.

Col. James H. Sprague, Norwalk, Ohio,

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has improved his tops by creating new styles, the fundamental principles remaining unchanged. Tops and bodies are also shown by the Springfield Metal Body Co. of Springfield, Mass.

SUMMARY OF CARS EXHIBITED.

PLEASURE CARS.

Gasolene:	
One cylinder	8
Two cylinder	15
Four cylinder	85
Six cylinder	2
Total gasolene cars	110
Chassis:	
One cylinder	2
Two cylinder	6
Four cylinder	32
Total Chassis	40
Electric	23
Total pleasure cars	173

COMMERCIAL CARS.

Gasolene	11
Electric	23
Total commercial	34
Total gasolene vehicles	161
Total electric vehicles	46
Total all cars	207

American Darracq Co., New York City.—Darracq gasolene cars; three four-cylinder touring cars.

Apperson Bros. Automobile Co., Kokomo. Ind.—Apperson gasolene cars; four-cylinder chassis, four-cylinder limousine and four-cylinder touring car.

Auto Import Co., New York City.—Rochet-Schneider gasolene cars; two four-cycle touring cars, two four-cylinder limousines, four-cylinder chassis.

Autocar Co., Ardmore, Pa.—Autocars, gasolene; four-cylinder chassis; four-cylinder limousine, four-cylinder touring car, two-cylinder chassis, two-cylinder runabout.

Bowman Automobile Co., Sidney B., New York City.—Clement-Bayard gasolene cars; two four-cylinder chassis, four-cylinder touring car, four-cylinder limousine, one limousine body and one touring car body.

Babcock Electric Carriage Co., Buffalo, N. Y.—Four electric carriages.

Buick Motor Co., Jackson, Mich.—Buick gasolene cars; two-cylinder runabout and four-cylinder touring car.

Cadillac Motor Car Co., Detroit, Mich.—Cadillac gasolene cars; four-cylinder chassis, four-cylinder limousine, two four-cylinder touring cars, single cylinder runabout, single cylinder tonneau.

Cantano Electric Tractor Co., New York City.—One electric bus and one electric brougham.

Columbus Buggy Co., Columbus, Ohio.—Electric runabout and two-seated carriage.

Decauville Automobile Co., New York City.—Decauville gasolene cars; four-cylinder limousine, four-cylinder touring car, four-cylinder cab.

Dietrich Importing Co., New York City.—Dietrich gasolene cars; one four-cylinder chassis.

Electric Vehicle Co., Hartford, Conn.—Columbia electric and gasolene cars; two four-cylinder chassis, four-cylinder limousine, four-cylinder semi-limousine, four-cylinder touring car, four-cylinder landaulet, two electric trucks and two electric delivery wagons, closed bus, brougham, small victoria, large victoria and two-seated hansom.

Elmore Mfg. Co., Clyde, Ohio.—Elmore two-cycle gasolene cars; two-cylinder tonneau, four-cylinder chassis and four-cylinder touring car.

Franklin Mfg. Co., H. H., Syracuse, N. Y.—Franklin air-cooled cars; four-cylinder chassis, four-cylinder runabout, six-cylinder touring car and two four-cylinder touring cars, and four-cylinder light truck.

Gallia Electric Carriage Co., New York City.—One electric runabout and one electric hansom cab.

Haynes Automobile Co., Kokomo, Ind.—Haynes Gasolene cars; four-cylinder chassis, three-cylinder limousine, four-cylinder touring car, two-cylinder runabout, two-cylinder chassis, and two-cylinder touring car.

Hewitt Motor Co., New York City.—Hewitt gasolene cars; one-cylinder delivery wagon, two one-cylinder chassis, two four-cylinder chassis, one-cylinder runabout, one-cylinder limousine.

Hollander & Tangeman, New York City.—F. I. A. T. gasolene cars; four-cylinder chassis, four-cylinder touring car and two four-cylinder limousines.

Knox Automobile Co., Springfield, Mass.—Knox gasolene cars; two-cylinder truck, two two-cylinder busses, one-cylinder delivery wagon, four-cylinder chassis, two-cylinder tonneau, two four-cylinder touring cars, four-cylinder limousine and two-cylinder runabout.

Locomobile Co. of America, Bridgeport, Conn.—Locomobile gasolene cars; four-cylinder racing car, two four-cylinder touring cars, four-cylinder limousine, four-cylinder chassis.

Matheson Motor Car Co., Wilkesbarre, Pa.—Matheson gasolene cars; four-cylinder model engine.

Northern Mfg. Co., Detroit, Mich.—Northern gasolene cars; two-cylinder chassis, one-cylinder runabout, four-cylinder touring car, two-cylinder touring car and four-cylinder chassis.

Olds Motor Works, Detroit, Mich.—Olds gasolene cars; two-cylinder chassis, two-cylinder delivery wagon, two-cylinder truck, two-cylinder touring car, two one-cylinder runabouts, four-cylinder touring car, four-cylinder runabout, four-cylinder chassis.

Packard Motor Car Co., Detroit, Mich.—Packard gasolene cars; two-cylinder truck, four-cylinder chassis, four-cylinder limousine, four-cylinder chassis, four-cylinder runabout.

Peerless Motor Car Co., Cleveland, Ohio. Peerless gasolene cars; four-cylinder chassis, four-cylinder runabout, four-cylinder touring car, four-cylinder limousine.

Pierce Co., George N., Buffalo, N. Y.—chassis, four-cylinder limousine, four-cylinder touring car (limousine attachment) and four-cylinder touring car.

Pope Mfg. Co., Hartford, Conn.—Pope, Pope-Hartford and Pope-Tribune gasolene cars; two-cylinder runabout, two-cylinder tonneau, two-cylinder chassis, two-cylinder touring car and four-cylinder touring car, two-cylinder truck.

Pope Motor Car Co., Toledo, Ohio.—Pope-Toledo gasolene and Pope-Waverly electric cars; four-cylinder chassis, three-cylinder touring cars, four-cylinder limousine; two electric trucks, two delivery wagons, one electric chassis, three electric runabouts, one electric brougham and an electric two-seated wagon.

Royal Motor Car Co., Cleveland, Ohio.—Royal gasolene cars; four-cylinder chassis, four-cylinder touring car, and two four-cylinder limousines.

Smith & Mabley, Inc., New York City.—Mercedes, Panhard and Renault gasolene cars; three four-cylinder limousines, four-cylinder touring car, two-cylinder chassis and two-cylinder bus.

Smith & Mabley Mfg. Co., New York City.—S. & M. Simplex gasolene cars; four-cylinder chassis, two four-cylinder touring cars, four-cylinder theatre bus.

Stearns Co., The F. B., Cleveland, Ohio.—Stearns gasolene cars; two four-cylinder touring cars, four-cylinder chassis.

Stevens Arms and Tool Co., Chicopee Falls, Mass.—Stevens Duryea gasolene cars; four-cylinder chassis, four-cylinder limousine, four-cylinder touring car and two-cylinder runabout, six-cylinder touring car.

Studebaker Automobile Co., South Bend, Ind.—Studebaker gasolene and electric cars; four-cylinder chassis, two four-cylinder touring cars, two four-cylinder limousines; three electric trucks, three electric delivery wagons and four electric runabouts.

Thomas Motor Co., E. R., Buffalo, N. Y.—Thomas gasolene cars; four-cylinder chassis, two-cylinder touring cars and two four-cylinder limousines.

Vehicle Equipment Co., Long Island City, N. Y.—Electric vehicles, four trucks, two delivery wagons and two theatre busses.

Waltham Mfg. Co., Waltham, Mass.—Waltham-Orient gasolene cars; two four-

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cylinder touring cars, four-cylinder runabout, one-cylinder buck board.

Walter Automobile Co., New York City. —Walter gasolene cars, four-cylinder chassis, four-cylinder touring car.

Winton Motor Carriage Co., Cleveland, Ohio.—Winton gasolene cars; four-cylinder limousine, four-cylinder runabout, two four-cylinder touring cars and four-cylinder chassis.

Accessories.

Allers & Co., New York.—Specialties.

American Ball Bearing Co., Cleveland, Ohio.—Ball bearings.

American Electric Novelty and Manufacturing Co., New York.—Electrical goods and Alvin self-starter.

American and British Mfg. Co.—"Evevr Ready" trip detector.

Anderson Spark-Plug Co.—Spark-plugs.

Atwater Kent Manufacturing Works, Philadelphia, Pa.—Electrical specialties.

Atwood Manufacturing Co., Amesbury, Mass.—Lamps.

Aurora Automatic Machinery Co., Aurora, Ill.—Thor Motorcycles and fittings.

Auto Brass and Aluminum Co., Flint, Mich.—Force feed oilers and parts.

Auto Coil Co., Jersey City, N. J.—Spark coils.

Auto Supply Co., The, New York.—Sundries and supplies.

Automobile Top and Cover Co., Inc.—Tops.

Badger Brass and Mfg. Co., Kenosha, Wis.—Solar Acetylene Gas Lamps.

Baldwin Chain and Manufacturing Co., Worcester, Mass.—Baldwin detachable and riveted chains, House Patent Recoil Check, Monitor speed recorder.

Barnes Gear Co.—Gears.

Belden Automobile Transmission Co.

Billy, C., New York.—Lamps.

Bowser & Co., Fort Wayne, Ind.—Gasolene storage outfits.

Brennan Manufacturing Co., Syracuse, N. Y.—Brennan motors and transmissions.

Briscoe Manufacturing Co., Detroit, Mich.—Radiators, fenders, etc.

Brown-Lipe Gear Co., Syracuse, N. Y.—Differentials, steering gears and sliding gear transmissions.

Bryne Kingston & Co., Kokomo, Ind.—Kingston automatic carburetters and mufflers.

Champion Co., Albert, Boston, Mass.—Ignition supplies.

Chandler Co., The, Springfield, Mass.—Nameplates.

Chicago Battery Co., Chicago, Ill.—Dry batteries.

Carpenter Steel Co., Reading, Pa.—Nickel chrome frames.

Columbia Lubricants Co., New York.—Monogram lubricating oils.

Consolidated Mfg. Co., Toledo, Ohio.—Yale California motor bicycles.

Continental Caoutchouc Co., The, New York.—Continental tires.

Continental Rubber Works, Erie, Pa.—Continental tires.

Cooper-Hewitt Electric Co., New York.—Hewitt Mercury Arc rectifiers.

Cramp & Sons Ship and Engine Building Co., the Wm., Philadelphia, Pa.—Manganese bronze castings.

Dac Automobile Supply House, New York.—Supplies.

Dayton Electrical Manufacturing Co., Dayton, Ohio.—Apple igniters and storage battery chargers.

Detroit Motor Car Supply Co., Detroit, Mich.—Tops, bodies and wind shields.

Diamond Chain Mfg. Co., Indianapolis, Ind.—Diamond chains.

Diamond Rubber Co., The, Akron, Ohio. —Diamond tires.

Dietz Co., R. E., New York.—Dietz oil lamps.

Duff Manufacturing Co., The, Allegheny, Pa.—Barret automobile jacks.

Eastern Carbon Works, Jersey City. N. J. —Eastern ignition cells.

Edmunds & Jones Mfg. Co., Detroit, Mich.—"E. & J." automobile lamps.

English & Mersick Co., New Haven, Conn.—Metallic automobile supplies.

Fine, Horace E., Trenton, N. J.—Automobile monograms, license tags and ornaments.

Firestone Tire and Rubber Co., Akron, Ohio.—Firestone side wire tires.

Fisk Rubber Co., Chicopee Falls, Mass. —Fisk mechanically fastened tires for automobiles.

Funke, A. H., New York.—Lamps, horns, supplies, etc.

G & J Tire Co., Indianapolis, Ind.—G & J detachable tires.

Gabriel Horn Manufacturing Co., New York.—Gabriel horns and Foster shock absorber.

Gas Engine Whistle Co., New York.—Watrous spent gas whistle.

Gilbert Mfg. Co., The, New Haven, Conn.—Gilbert tire covers and supplies.

Goodrich Co., The B. F., Akron, O.—Goodrich tires.

Goodyear Tire and Rubber Co., The, Akron, Ohio.—Goodyear tires.

Gray & Davis, Amesbury, Mass.—Lamps.

Ham Mfg. Co., C. T., Rochester, N. Y.—Lamps.

Hardy Co., the E. R., New York.—Starite spark-plugs.

Hartford Rubber Works Co., Hartford, Conn.—Perfected Dunlop, Hartford and Turner tires.

Hartford Suspension Co., New York.—Hartford Truffault Suspension.

Harris Oil Co., A. M., Providence, R. I.—Motor car lubricants.

Hatch & Brittain, Inc., New York.—United States Emergency Outfit.

Heinze Electric Co., Lowell, Mass.—Heinze motor car coils.

Herz & Co., New York.—Spark-plugs and ignition supplies in general.

Hess-Bright Manufacturing Co., The, Philadelphia, Pa.—Ball bearings.

Hooker & Co., Henry, New York.—Bodies.

Holly Bros., Detroit, Mich.—Holly magnetos and carburetters.

Hyatt Roller Bearing Co., Harrison, N. J. —Roller bearings.

Hydraulic Oil Storage and Distributing Co., Detroit, Mich.—Snell system of hydraulic storage.

Imperial Brass Mfg. Co., The, Chicago, Ill.—Wixon Compound air pump and Imperial Lyon headlight adjuster.

International A. & V. Tire Co., New York.—Tires.

Iron Clad Mfg. Co., Brooklyn, N. Y.—Gasolene storage tanks.

Jones & Co., Phineas, Newark, N. J.—Wood wheels.

Jones, Jos. W., New York City.—Speedometers and Odometers.

Judson & Downing Co., New York.—Automobile parts of every description.

Lackawanna Leather Co.—Leather fabrics.

Light Manufacturing and Foundry Co, Pottstown, Pa.—Aluminum castings and bearing metals.

Lunkenheimer Co., The, New York.—Lubricating devices.

Manufacturers' Foundry Co., The, Waterbury- Conn.—Motor castings.

McCord & Co., Chicago, Ill.—Lubricators.

McGiehan Manufacturing Co., New York. Odometers.

Meyrowitz Mfg. Co., New York.—Goggles.

Mesinger Mfg. Co., New York.—Mesinger tire band.

Michelin Tire, American Agency, Inc., New York.—Michelin Tires.

Michigan Steel Boat Co., Detroit, Mich.—Steel bodies.

Midgley Manufacturing Co., Columbus, Ohio.—Pressed steel wheels.

Midvale Steel Co., Midvale, Pa.—Steels.

Miller, Charles E., New York.—Sundries and supplies of every description.

Motor Car Equipment Co., The, New York.—Supplies for automobiles.

Motor Car Specialty Co., Trenton, N. J.—Lea tire pump, Lea Speedistometer.

Motsinger Device Manufacturing Co., Pendleton, Ind.—Motsinger auto sparker.

Morgan & Wright, Inc., Chicago, Ill.—Morgan & Wright clincher and detachable tires.

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Mosler & Co., A. R., New York.—Mosler timers, Spit-fire spark-plugs.

Mutty Co., L. J., Boston, Mass.—Automobile top materials.

Rubay, Leon, New York.—French specialties.

Rushmore Dynamo Works, Plainfield, N. J.—Lamps.

Sampson Leather Tire Co., New York.—Sampson leather tires.

Schwartz Wheel Co., The, Philadelphia, Pa.—Wheels.

Semi-Dry Battery Co., New York.—Dunn Semi-Dry Battery.

Sibley & Pitman, New York.—Supplies.

Shelby Steel Tube Co., Pitttsburg, Pa.—Steel tubing.

Soffan, M., New York.—Hercules tires.

Smith & Co., Edward, New York.—Specialties.

Spicer Universal Joint Manufacturing Co., Plainfield, N. J.—Spicer universal joints.

Splitdorf, C. F., New York.—Ignition apparatus.

Springfield Auto Top and Upholstering Co,. Springfield, Mass.—Tops.

Sprague Umbrella Co., The, Norwalk, O.—Tops.

Springfield Metal Body Co., Springfield, Mass.—Bodies.

Standard Roller Bearing Co., Philadelphia, Pa.—Axles, etc.

Standard Welding Co., The, Cleveland, Ohio.—Rims, tubing, etc.

Swinehart Clincher Tire and Rubber Co., Akron, Ohio.—Swinehart tires.

Timken Roller Bearing Co., Canton, O.—Roller bearings.

Twentieth Century Manufacturing Co., New York.—Lamps.

Utility Co., The, New York.—Electrical specialties.

Valentine & Co., New York.—Varnishes.

Vacuum Oil Co., New York.—Lubricants.

Veeder Manufacturing Co., The, Hartford, Conn.—Odometers, Tachometers, etc.

Ventilated Cushion Co., The.—Cushions.

Warner Instrument Co., Beloit, Wis.—Speedometers.

Warner Gear Co., Muncie, Ind.—Gears.

Way Muffler Co., Philadelphia, Pa.—Way Mufflers.

Webb Co., The, New York.—Speed indicators.

Weed Chain Tire Grip Co., New York.—Weed chain tire grips and Lashar Electric speed indicator.

Wheeler, E. H., Indianapolis, Ind.—The Schebler carburetter.

Wheeler Manufacturing Co., Detroit, Mich.—Tops.

Whitlock Coil Pipe Co., Hartford, Conn.—Whitlock coolers.

Whitney Manufacturing Co., Hartford, Conn.—Whitney chains.

Witherbee Igniter Co., New York.—Witherbee igniters.

Willis & Co., E. J., New York.—Specialties and sundries.

Wray Pump and Register Co., Rochester, N. Y.—Pumps and pressure registers.

National Battery Co., Buffalo, N. Y.—"Reliance" batteries for electric vehicles.

National Carbon Co., Cleveland, Ohio.—Columbia dry batteries.

National Sales Corporation, New York.—Sundries.

New York Carriage Top Co., New York.—Tops.

New York and New Jersey Lubricant Co., New York.—Lubricants.

New York Sporting Goods Co., New York.—Supplies.

Noera Mfg. Co., The, Waterbury, Conn.—Lamps, pumps, etc.

Ofeldt & Sons, F. W., Brooklyn, N. Y.—Ofeldt's steam specialties.

Oliver Manufacturing Co., Chicago, Ill.—Automobile jacks.

Pantosote Co., New York.—Pantosote for coverings.

Patterson, Gottfried & Hunter, Ltd., New York.—Tools.

Parish & Bingham Co., Cleveland, O.—Steel frames, parts and fittings.

Pennsylvania Rubber Co., Jeanette, Pa.—Tires.

Pittsfield Spark Coil Co., Pittsfield, Mass.—Ignition outfits.

Post & Lester Co., The, Hartford, Conn.—Lamps, horns and supplies.

Prest-O-Lite Co., Indianapolis, Ind.—Prest-O-Lite gas tanks.

Prosser & Son, Thomas, New York.—Krupp Steel Works.

Railway Appliance Co., Chicago, Ill.—Auto-Cle wrenches.

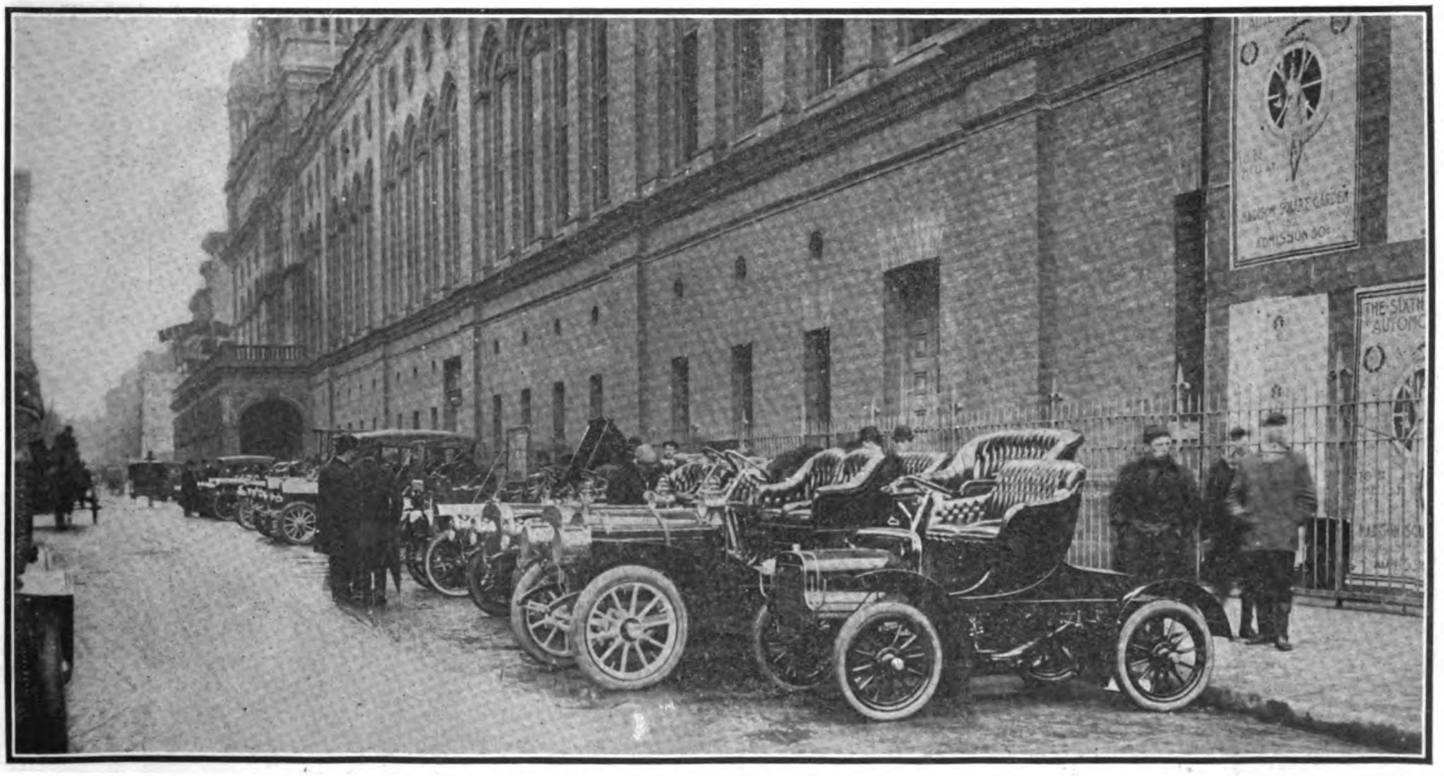
Remy Electric Co., Anderson, Ind.—Remy magnetos.

Republic Rubber Co.—Tires.

Republic Rubber Tire and Shoe Co., New York.—Tire shoes.

Rose Manufacturing Co., Philadelphia, Pa.—Neverout lamps.

Roth Jack and Tool Co.



DEMONSTRATING CARS LINED UP OUTSIDE THE GARDEN.

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The Show Handsome, Likewise Instructive

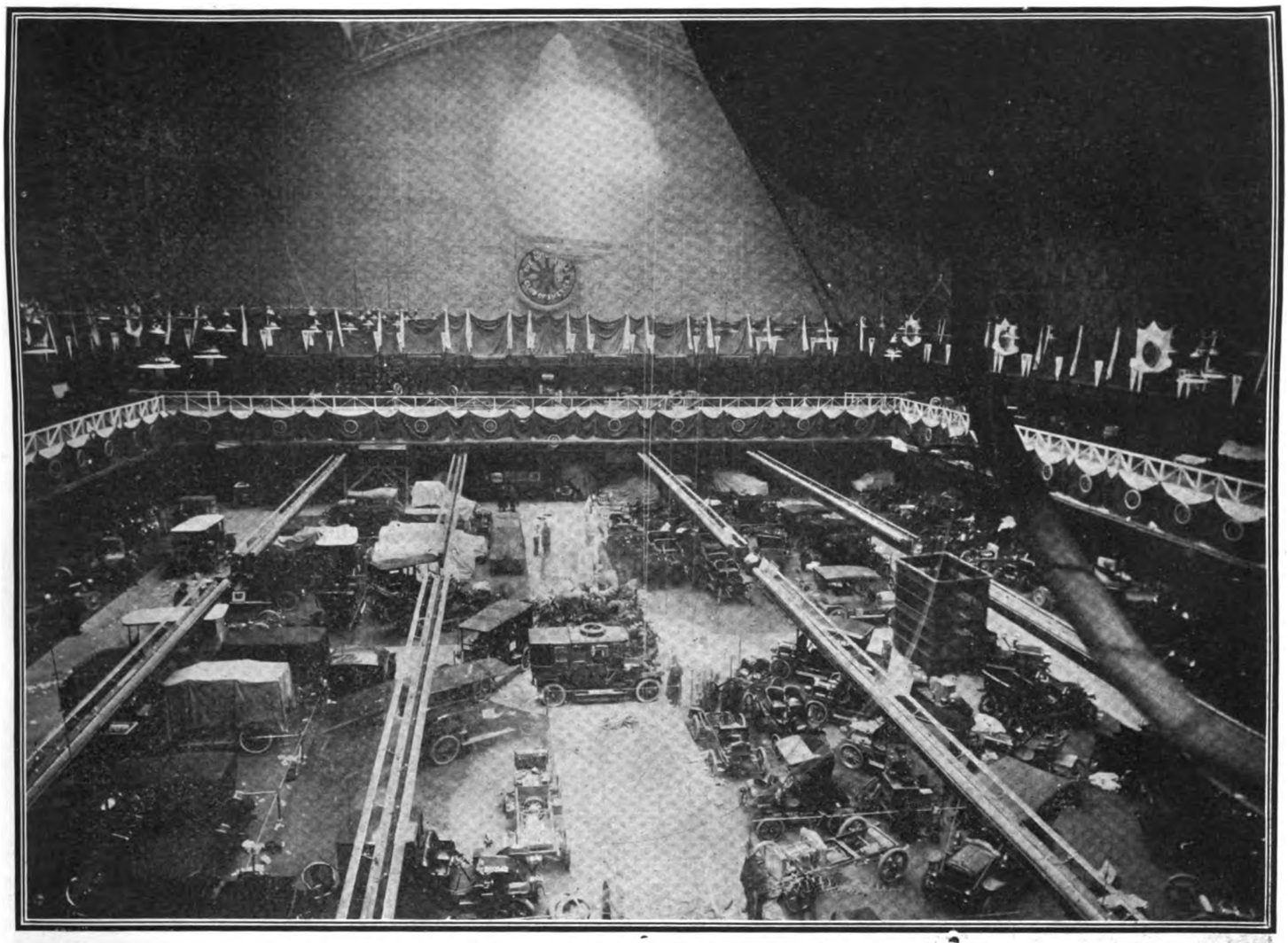
"I fancy that it will surprise a few people," was the remark of one of those connected with it when the armory show was under discussion a day or two before it opened. It is fair to add that the armory show has done that very thing. Surprise—agreeable surprise—was almost general.

Generally speaking, chiefly from the spectacular standpoint, the show is more rugged than the one "across the way," but it does not suffer greatly by comparison. The Automobile Club of America has accomplished wonders with the Sixty-ninth Regiment's building, which, at least so far as the main floor and gallery are concerned, is admirably adapted to exhibition purposes. The decorations are simple but effective, and being in harmony the effectiveness is heightened. All signs and trappings are of dark green and gold and the general good effect has been heightened by the generous spaces allotted to the exhibitors on the main floor. As a result, the cars are not packed into place like sardines and there is none of the overcrowding observable elsewhere.

The armory show has a statue, too—a heroic white figure of Mercury arising from the bullrushes, or rather a plot of shrubbery. Merc occupies the very centre of the hall and is a distinct addition, as he was an unexpected one. The A. C. A. also has its emblem reproduced in giant's size in electric bulbs and pinned to the bare brick wall over the archway. The walls, because of their size and commanding position, might have been made the groundwork of a strikingly impressive picture of some sort. There are a couple of huge airships suspended from the ceiling and a remarkably complete display of such aerial vehicles and photographs thereof in the gymnasium upstairs. But it's a soldier's job to climb these stairs, so steep are they. And, strange to say, there is surprisingly little curiosity displayed in the airship display. The spec-



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GENERAL VIEW OF THE ARMORY SHOW FROM THE EAST GALLERY.

tators apparently come to see the cars and have eyes for little else.

To tell the whole truth, however, there has been no little grumbling on the part of some of the exhibitors. Not the ones on the main floor or the gallery, however. They are as happy as larks at sunup. But once off away from these favored locations and phew! it is equivalent to entering a mystic maze.

Upstairs and down and around corners there are rooms, more rooms, and still more rooms—rooms to the right and to the left and in every other direction. The exhibitors in the furthermost or most snugly hidden of the rooms are the men who are growling. It would require a guide to find them, and as guides are not supplied many people weary of the task before locating their objective. It is almost like a game of hide and seek—out of one room and into another. On the other hand, in the more favorably located rooms, the crowd is packed so closely that it is akin to a football rush to get into them or out of them once one is inside. Some of the grumblers grumbled so loudly that finally they were permitted to remove their exhibits into the hallways.

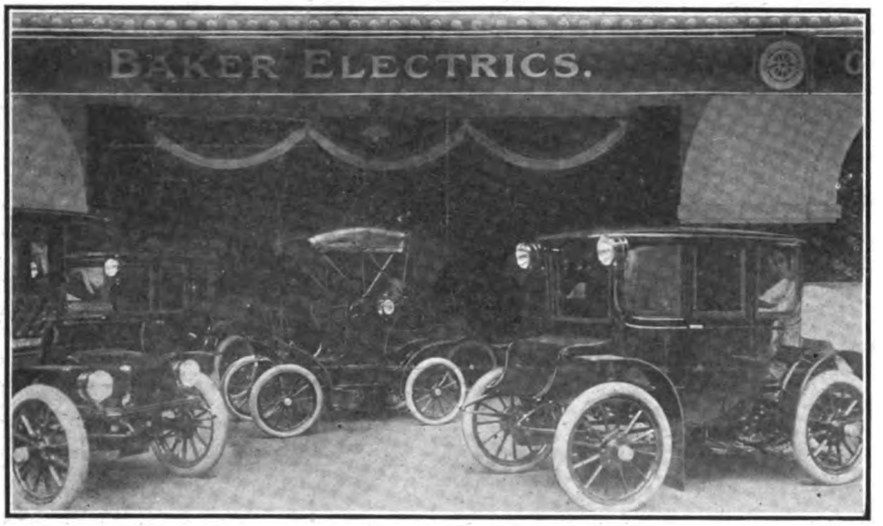
The crowds that have attended have been large and interested, and even the casual visitor has found things to cause him to pause. The highly polished chassis catch his eye, and of the many that displayed by the Ford Motor Co. has made him rub his eyes so beautifully finished is it. It is as bright as a newly minted dollar. Of the other extreme is the Areo chassis. It is all black which means that it is not showy. It looks strong and essentially businesslike. It is distinctive because of its blackness. At the Reo booth is a four-passenger car which never fails to stop every passerby. The "Baby Reo" they call it and baby in size it certainly is. It stands on a small table, but at that it weighs 200 pounds. Despite its tininess it is as complete as the Reo itself in every detail, motor, spark plugs, clutch and everything else, and though toylike, the Reo folk say it acts perfectly and develops no mean speed.

On Tuesday, the four-cylinder $500 Ford runabout put in an appearance at that stand, which since has been fairly mobbed by the great crowds that fairly fall over each other in their eagerness to see the new comer. The interest in this popular priced car is intense and far greater than ever the prophets anticipated and the Ford attendants are busy writing orders every moment of the day.

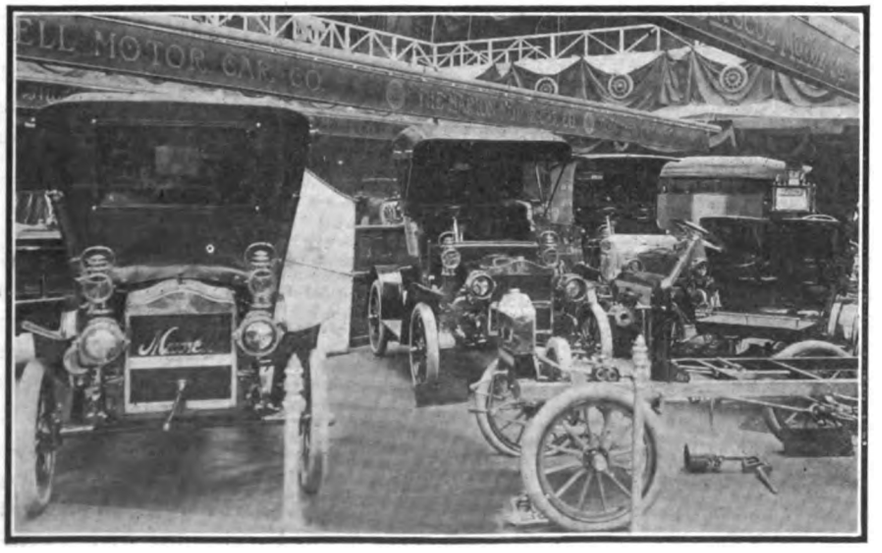
THE CARS REVIEWED.

All automobiles look alike to some people and the same may be said of all shows to the same class of individuals. In a general way, of course, the show held in the Armory resembles that in the Garden, when considered solely from the point of view of the cars staged. The same general tendencies are in evidence, but, as there is a large showing of Western cars, in fact the

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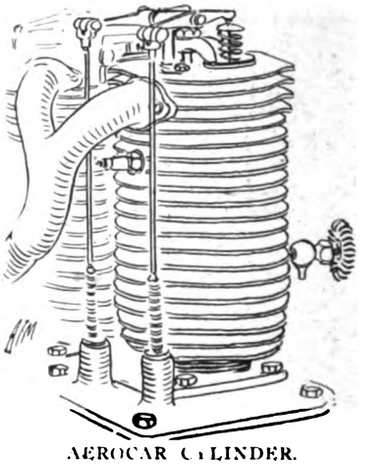




largest aggregation of Western makers who have ever come together in New York, it was to be expected that considerable independence of thought and breeziness of design would await the visitor in their productions. Another distinctive feature of the Armory Show lay in the fact that so many of the cars were marked at a figure to appeal to a great number of buyers—the medium and low-priced cars that are within the capacity of pocket of the masses.

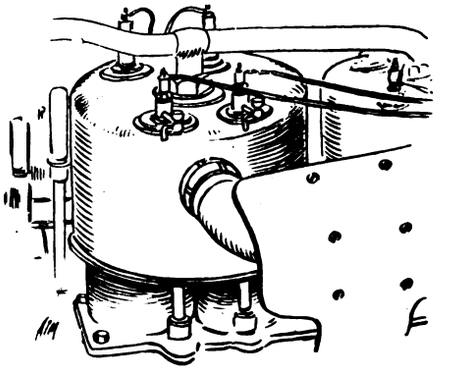
Motors.

There are several points about the motor which are of considerable interest to the



AEROCAR CYLINDER.

unbiased observer, and a comparison brings out the good points of both in every instance. Predictions as to the greater prevalence of the practice of casting cylinders independently find their fulfillment in no less than seventeen different instances, such as on the striking new chassis of the Ford six-cylinder, the National six-cylinder, all the new and business like members of

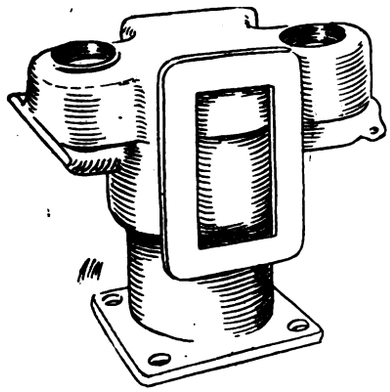


CHADWICK SEPARATE COPPER WATER JACKET.

the Rambler four-cylinder family, the Iroquois and the three new Mitchells, including the 10 horsepower two-cylinder runabout that makes a very favorable impression, particularly when its extremely low price is considered. The Acme, Berkshire and the new four-cylinder Maxwell embody the same practice, as do also the Stoddard-Dayton, the Crawford, the York and the Grout. A particularly novel feature of the York cylinders consists in

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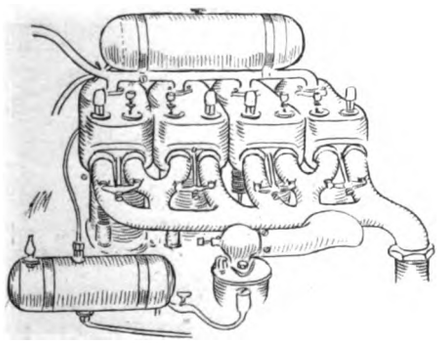
casting them with the jackets open on the side on which they abut. These openings, which are rectangular and extend practically the height of the jacket, are flanged so that when two cylinders come together they are easily bolted one to the other thus making a continuous water jacket and giving the rigidity of a single casting, the joints being covered with polished brass which makes a neat effect. A novel departure is to be found on the Lambert, in which case all the cylinders are made in one casting – a method that produces a very solid and clean appearing motor. Among those employing twin castings are the Lozier, the Cleveland, the St. Louis, the Dolson, the Reo, Moline, Jackson, all the Wayne four-



YORK-PULLMAN CYLINDER CASTING.

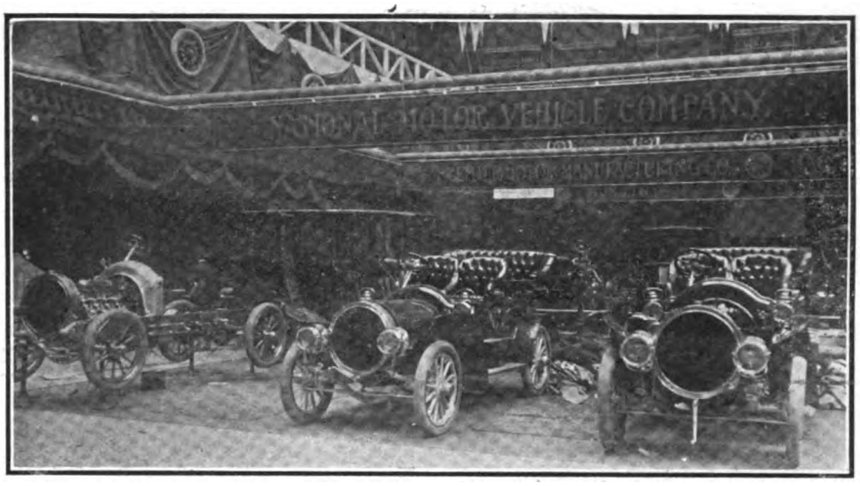
cylinder models, the new Dorris, the Westinghouse, Windsor, and last, but far from least, the new Ford runabout, the striking appearance of the latter's motor arousing no small amount of admiration from the spectators who were piled several deep about it all the time.

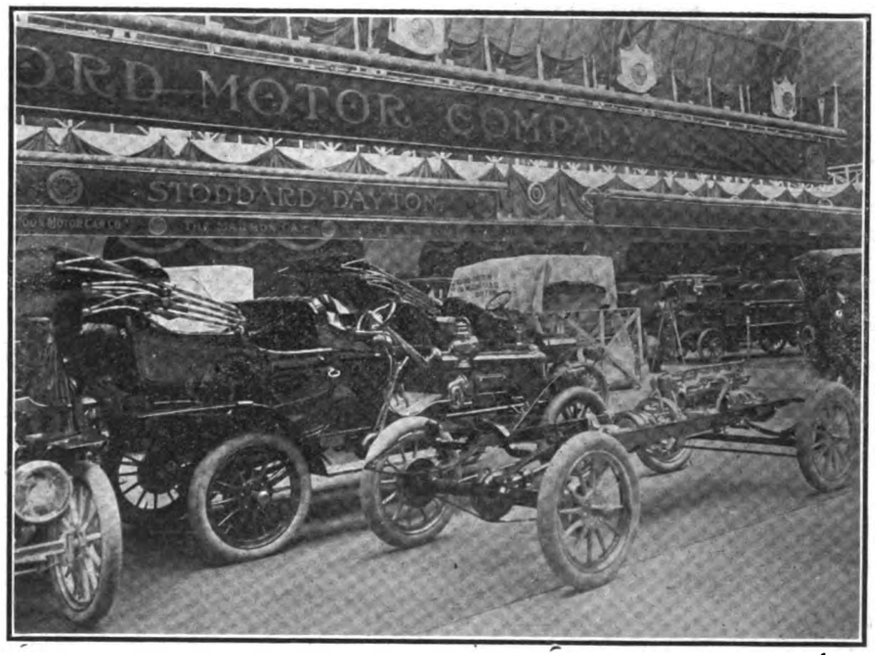
Air cooling is considerably more in evidence than ever before, and has now

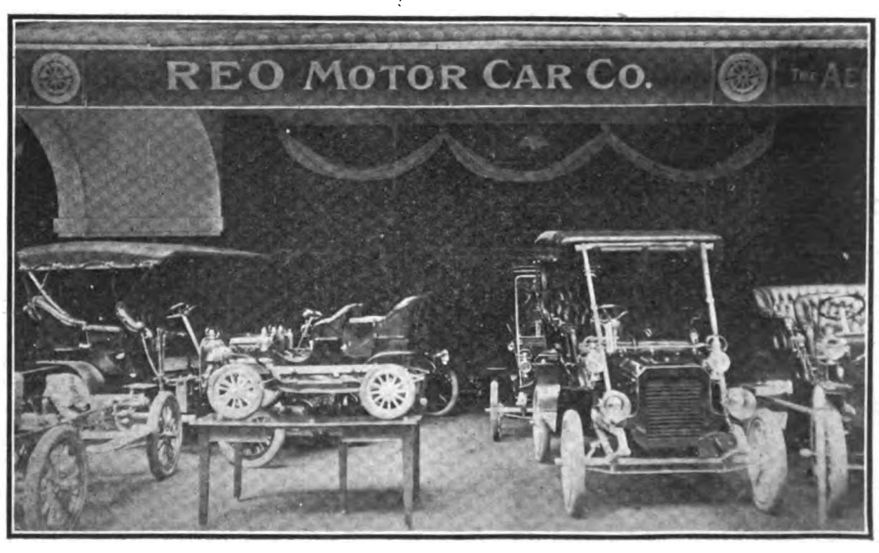


NATIONAL AUXILIARY GASOLENE TANK AND OIL TANK.

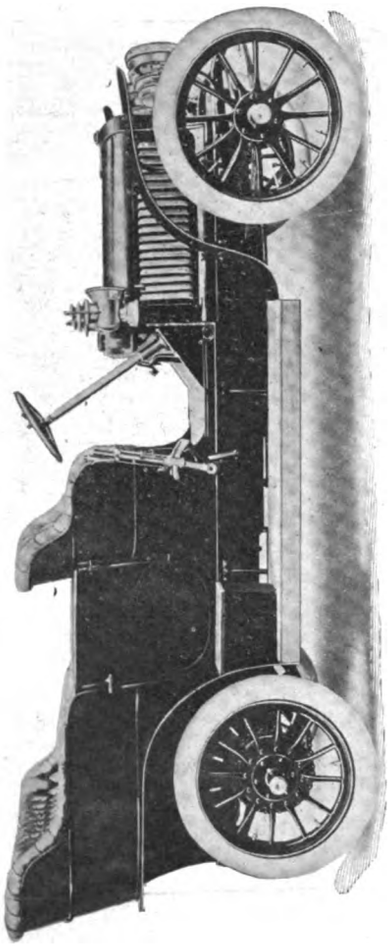
reached a position where no handicaps are asked of any rival. It has reached a stage where all thought of experimentation or uncertainty of success is a thing of the past There is an addition to the ranks in the shape of the Aerocar, the appearance of which attracted considerable attention, while the Premier, the Marmon, the Marion and the Corbin were well represented and the Frayer-Miller, which has so thoroughly established its reputation was a center of attraction owing to the exhibition of the



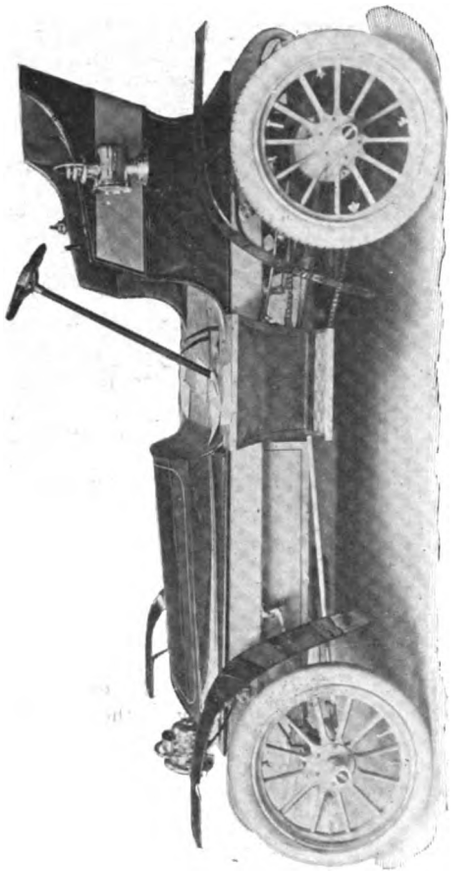




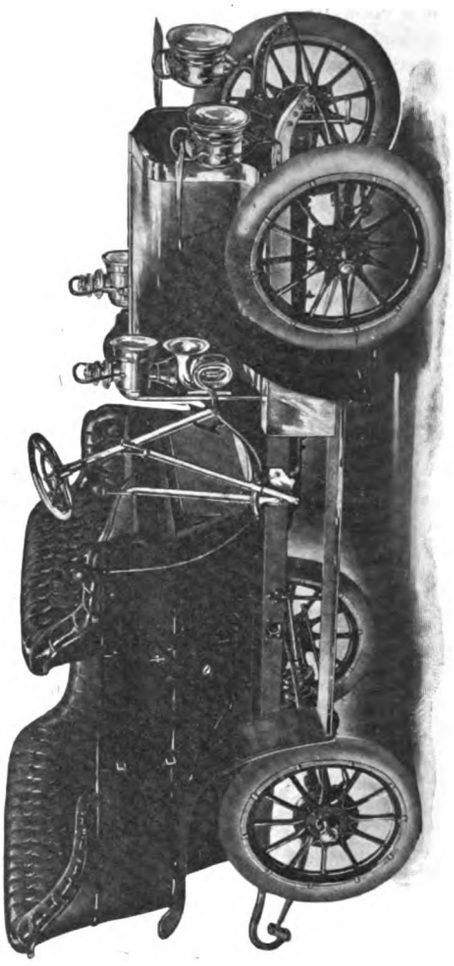
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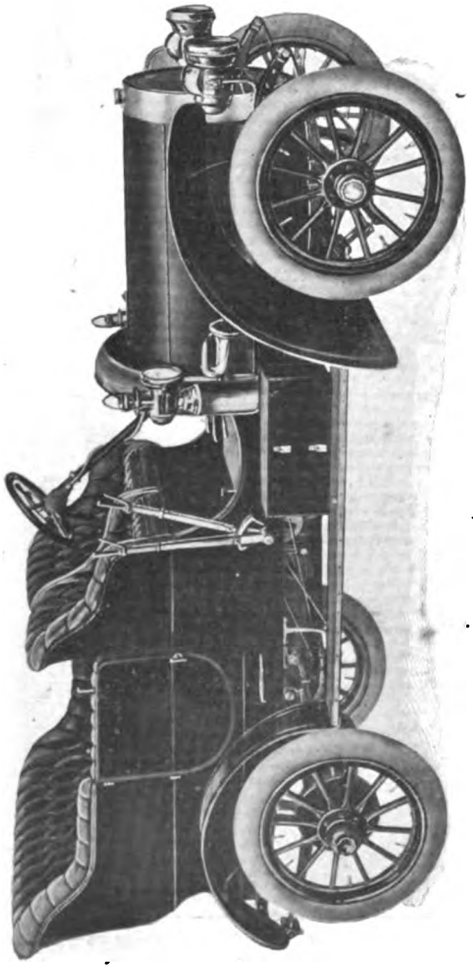
LOZIER.



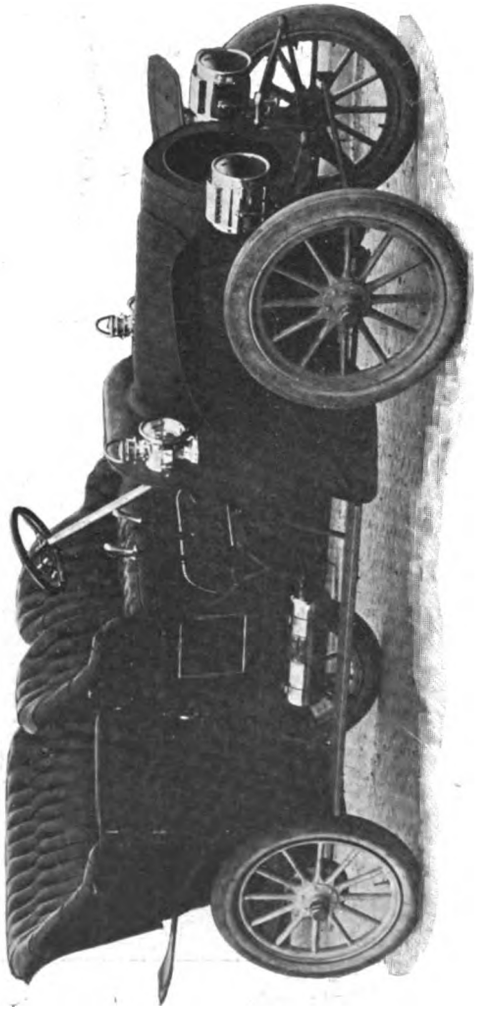
LANSDEN (Electric).



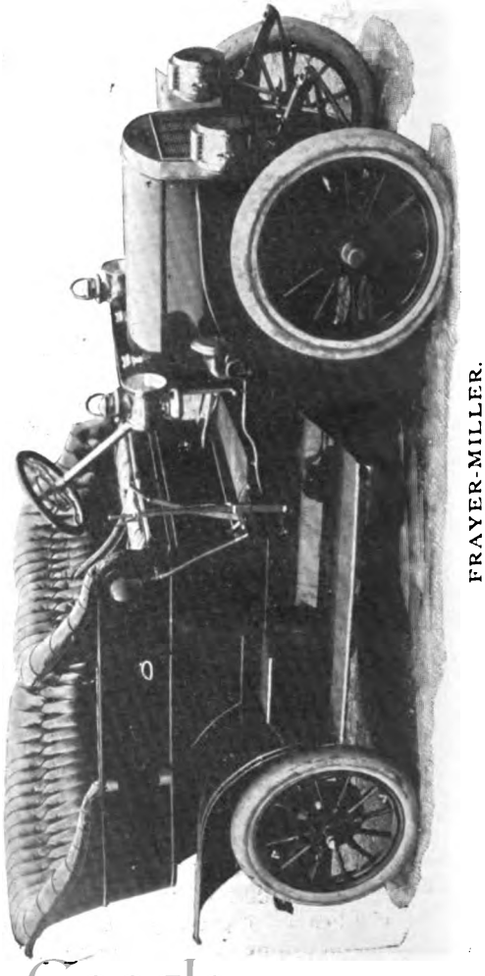
CORBIN.



NATIONAL.



PREMIER.



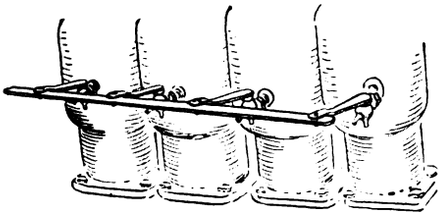
FRAYER-MILLER.

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new six-cylinder model, which presented a strikingly business-like appearance. In all these cases, of course, the cylinders are cast independently.

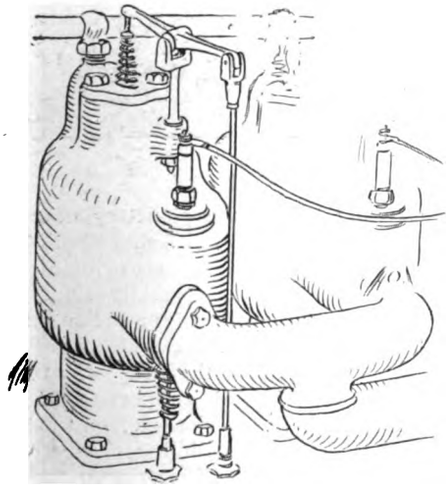
Valves.

Considerable difference of opinion on the part of designers as regards valve placing was freely predicted, and those who looked for diverging standards were not disappointed. Out of 46 cars, each one the product of a different maker, 15 or prac-



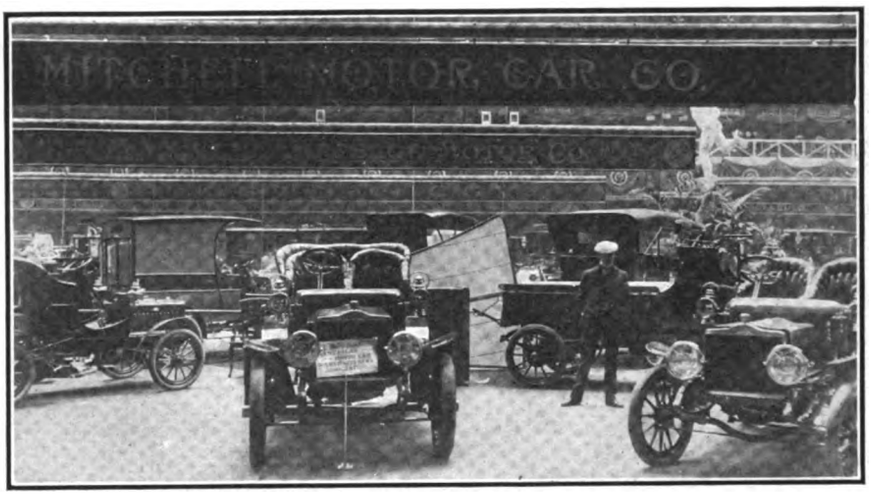
GLIDE COMPRESSION RELEASE.

tically a third favored opposite disposition, as in the case of the new four-cylinder Waynes, the Viqueot, Bliss, Maxwell; Lozier, Cleveland and the new American Berliet. It was also noticeable that the advocates of placing the valves in the head have increased considerably, one of the most striking instances being that of the Dorris motor, which is without doubt one of the most interesting of the new arrivals in the field. The Dorris motor, as a whole, is a piece of finished work that throws great



MITCHELL VALVE ARRANGEMENT.

credit on its designers and builders, and is one to catch the eye and hold the attention of the mechanical sharp. In air-cooled practice the head valve has come to be considered standard. One of the notable instances in which the superimposed valves are well worked out is that of the newcomers to the Rambler family in which both inlet and exhaust are in the head, while in the Mitchell runabout both are on the same side, as is also the case with the Ford runabout and the Ford six-cylinder model. The Queen National, St. Louis, Stoddard, Dayton and



the new Moon have both valves on the same side.

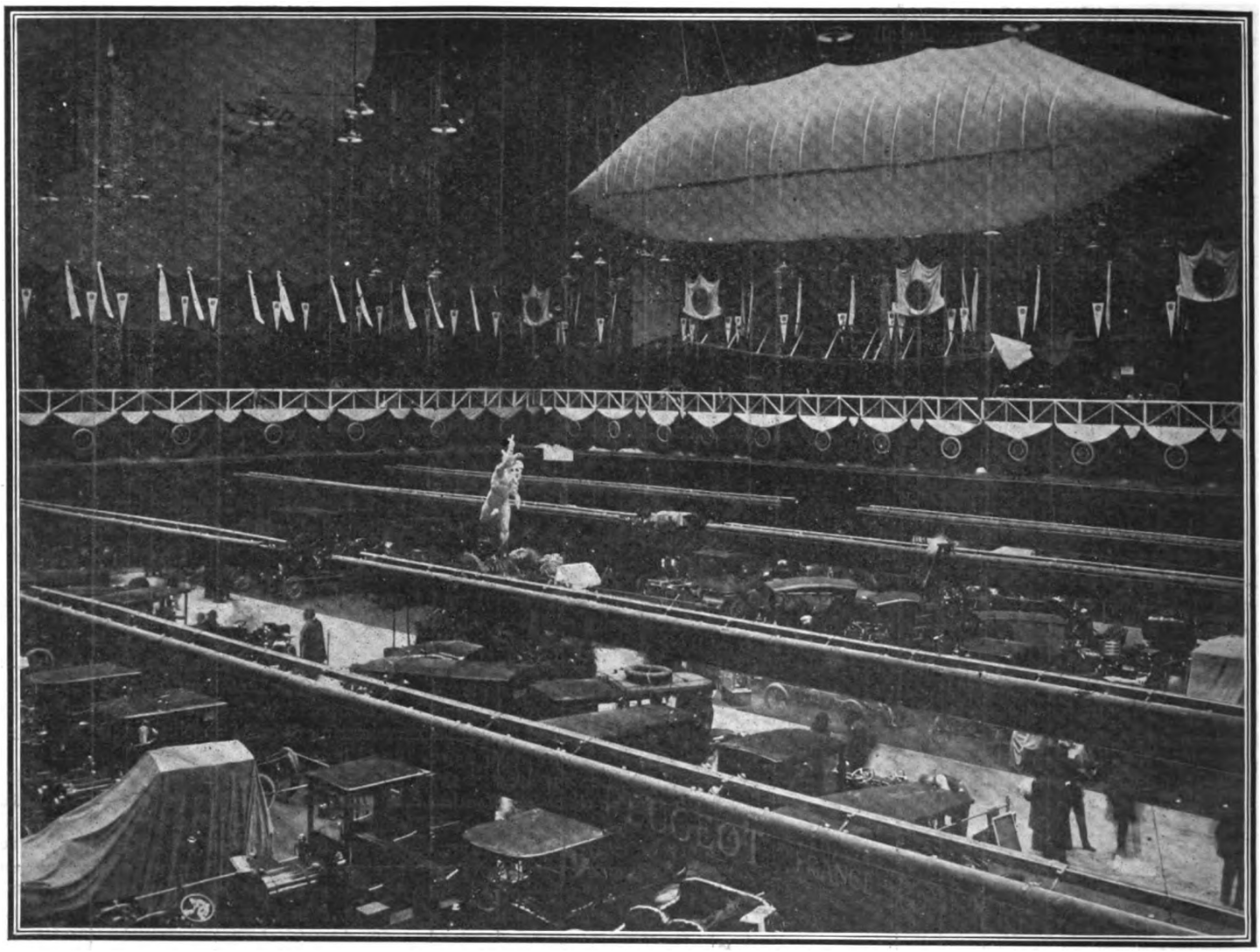
Lubricating Systems

On the vital essential of lubrication makers seem to be pretty well agreed, and in the case of the majority of the Western makers, as well as others for that matter, they have favored a home product by making the Hill Precision oiler the standard equipment in this respect, as they have also done in the matter of carburation by adopting the Schebler—the number of both these items that are in evidence on cars at the armory making it appear that the adoption of these two accessories was very general indeed. Certainty of lubrication is insured on the Lozier by the use of no less than three sources of supply, a pressure feed through hollow cranks, scoops on the connecting rods and a supplementary wick feed on the main bearings with splash for the piston and wrist pin. In the matter of cylinder dimensions there is not a great deal to be said. Practice has become so well settled on this point that motors of the same dimensions will in the majority of instances be found to have the same rating, as, for instance, in the case of the new leader of the Ramblers, measuring 5x5½ inches and rated at 45-horsepower, is found to be the same as the Maxwell in proportion, the latter being 5x5, with a rating of 40, or even as compared with some of the foreign cars measuring 5⅛x5⅝ approximately, and rated at 45 horsepower.

The expedient of offsetting the cylinders in order to counteract the thrust is a thing that has been advocated abroad as well as by some makers of special designs here, such as the Duryea, and while an advantage it is something that does not gain ground rapidly, the Upton, which is a particularly well thought out car throughout being one of its new converts for the present year. In steamers, the White, which easily holds the



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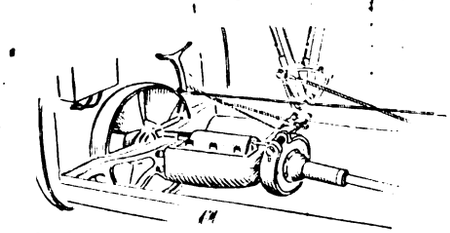
VIEW OF ARMORY SHOW FROM NORTHWEST GALLERY.

title of place, has been increased in horsepower from 15 to 18, with a corresponding increase in the steaming capacity of the generator.

Transmissions.

Of course, the sliding pinion type of change gear has come into very general use this year, its application to machines which a year ago would have been equipped with planetary gears, being one of the features of the show. In design there has been a marked improvement in the method of laying out the gears, and in the method of securing the changes. The gear boxes are now of neat and accessible construction, and the gears themselves are cut of large pitch from most excellent stock, and have well beveled ends to insure smooth engagement. The use of anti-friction bearings has been increased to a very great extent, and the general appearance of the transmission group as a whole has been vastly improved. Planetary gearing is used to a limited extent, and the type of individual clutch which had several exponents a year or two ago has fallen into disuse. Indeed, the only car which still adheres to it is the Welch, which appears this year with some slight improvement.

A census of the exhibits reveals the fact that 80 per cent. of the cars are fitted with the sliding gear transmission, 75 per cent. of these having three speeds besides the reverse and 22 per cent. having four forward speeds. On the Logan touring cars and trucks is found an exception in the shape of a two-speed sliding gear arrangement, which gives a direct connection on the higher arrangement. Something like 6 per cent. of the entire number are fitted with the planetary type of transmission, most of these, naturally enough, being of the lower priced class. The great exception, which proves the rule in this case, is found on the Ford stand, where the planetary usage is carried throughout, even being applied in an improved form to the six-cylinder machine which is thereby greatly simplified, both in construction and operation. Presumably in this case the extreme flexibility of the motor renders the need of a transmission practically nil, and hence the use of the low gears would be confined to starting and semi-occasional hill work where the grade was excessive. The friction type of transmission is fitted by three different makers, namely, the Crown, Windsor and Lambert.

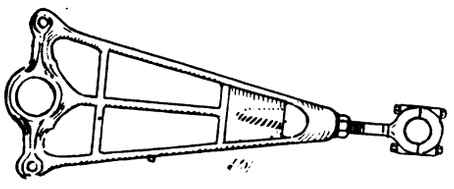


DORRIS CLUTCH AND TRANSMISSION SUSPENSION.

In the construction of master clutches the greater number of the makers still hold to the cone type, many of them inverting the driven member and enclosing it, as is done very neatly on the Corbin car, and others, using the ordinary arrangement, but making the spring self contained and very easily adjustable, as in the case of the Lozier. Over 50 per cent. of the cars have cone clutches of one sort or another. Of these a few are made to run with metal to metal, and member being closed up and run in oil, but the majority still use the leather facing, with relieving springs placed

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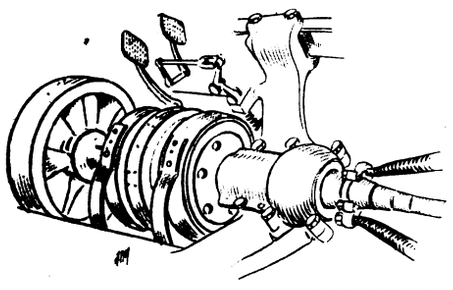
beneath it to lessen the tendency to sudden gripping when the pedal is released. There is a great deal of variety to be seen in the precise method of application, and also in the matter of size, in which the makers do not seem to have agreed upon any rule as to the amount of area properly required per unit of motor power. One of the neatest arrangements to be seen is on the Frayer-Miller, where the inverted clutch seat is bolted to the flywheel by means of a series of offset arms which allow for the placing of the driven member between it and the flywheel, together with the spring, and at



VIQUEOT CAST DISTANCE ROD.

the same time furnishes a perfectly light, though rigid, construction. The arrangement is a decided improvement over that of last year, and provides for the removal of the clutch in its entirety without interfering with the gear box.

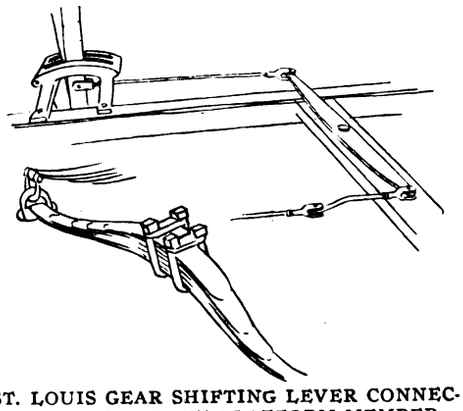
Perhaps a quarter of the cars are fitted with clutches of the multiple disc order, the greater number of these being of the heavier type. The tidiest of these devices is seen on the Welch car, which though having no master clutch yet serves as an illustration of what is possible in the construction of the multiple disc type. The member in question is composed of nine elements, consist-



TRANSMISSION SIX-CYLINDER FORD.

ing of alternate bronze and steel plates, and it is but six inches in diameter by one and a quarter long. The application of the power is made through the medium of a pair of small dogs, and the whole arrangement is so small and compact as to appear totally inadequate for its purpose, yet its capacity is far in excess of any possible demand. Among the makers who have applied this type with apparent success for the first time this season are the Premier Motor Car Co., the St. Louis Motor Car Co. and the makers of the Upton, Wayne and Dorris cars—the latter in particularly commendable fashion. Several of the large foreign-American machines, like that product of an all-comprehensive industrial group, the Westinghouse, also use the multiple disc type to advantage.

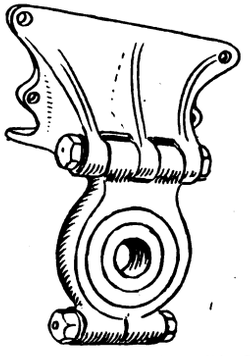
On a very few machines are to be seen a form of expanding ring clutch, the idea being particularly well brought out in the case of the York Pullman, in which a single dog is made to expand a two-part ring by means of a short toggle movement. Riding



ST. LOUIS GEAR SHIFTING LEVER CONNECTION AND FRONT PLATFORM MEMBER REAR SUSPENSION.

upon the driven member is a bronze friction ring, the functions of which are to furnish a bearing surface between the expanding ring and the flywheel, and to give a certain amount of desirable yieldability during the period of early engagement as a preventative of fierceness. It is a noteworthy fact that with clutches of this general type, the force requisite to secure and maintain the engagement of the working surfaces is so slight that but a comparatively weak spring is necessary, and also that on this account the provision of a special thrust bearing to take up the reaction of the mechanism when out of engagement becomes comparatively insignificant.

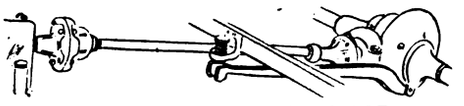
In the method of connection between the clutch and the gear box, is seen this year more than ever before, a tendency to the use of the universal joint. Nearly every car has some provision of this sort, most commonly placed directly in front of the gear box. In one or two cars, notably the Bollee, this joint is placed directly in the



CRAWFORD COUNTERSHAFT HANGER.

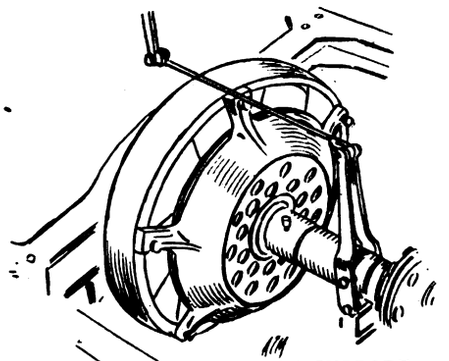
clutch member, which, in such cases is of the simple cone type. An instance of the use of this idea on an American can is seen in the Chadwick. The benefit from this is two-fold, since it provides against any springing or binding in the shaft from distortion or disalignment, and also ensures the uniform seating of the clutch at all points in its periphery. The increased usage in this respect marks a decided step in the making of the ideal car, in that it is a recognition of the practicable impossibility of maintaining a rigid alignment between the different organs of the machine under all conditions, except in the case of a comparatively small car where the complete unit construction is possible.

The latter idea has been well carried out in the case of the smaller Maxwell, in which the gear case is made a continuation of the motor housing, and is perfectly rigid with it. The same principle is applied as well in an exceptional case in the new Dorris car, which in many ways shows the stamp of originality. Here, the gear case



CORBIN SPRING TORSION ROD.

is mounted entirely free of the frame, at the side and rear, being bolted to the flywheel housing which is constructed in the form of a cross member of the frame just in front of the dash, and also serves a purpose in the support of the engine. Within the enclosure of this framework which is extended in tapering form, is the multiple disc clutch and directly behind it, the gear changing mechanism in which the shafts are arranged in a vertical plane. There is but a single sliding member, and the shaft runs continuously even on the direct drive, when it is idle. By driving it at half the speed of the motor it is claimed that no



FRAYER-MILLER CLUTCH SUPPORT.

harm can result from this practice, as there is no load on the gears. This argument is upheld by several other of the makers who use the direct connection without disconnecting the lay shaft.

In the matter of the mounting of the gear box in the chassis, practice varies considerable, the three point principle obtained by hanging the rear portion of the case on the counter shaft bearings or in sleeves which enclose the counter shaft is rather popular in the chain drive cars, while the plain four area arm mounting from the frame, or in less frequent instances, from the fast disappearing subframe.

In connection with the use of the selective system of gear changing, some very pretty pieces of design are seen on one or

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two of the cars. The Westinghouse, for instance, in which three sliding sets are employed, has the selective, or pick-up mechanism for the shifting bars in a case which is entirely independent of the gear case. A cam plate provided with a single depression in its face, is made to slide traversely of the machine by the motion of the shifting lever when passing from one train to another, thereby allowing one of three spring actuated fingers to fall. Upon the lower ends of these finger arms are a second set of fingers which fall into notches in the shifting bars under the action of the springs, thereby holding them in the neutral position. Within the casing proper, into which the ends of the shifting rods extend, are the traverse shaft of the shifting lever and an arm carried by it, which is adapted to engage with one or another of the rods according to its position. Thus, when the shifting lever is brought into one of the slots in the gridiron, the arm picks up the proper shifting bar, while the cam releases the rod and permits it to be moved.

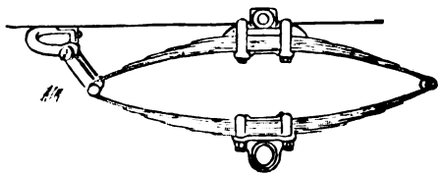
Quite in contrast to this, is the shifiting mechanism of the American Berliet, which is enclosed entirely, and from which three rods run back to the gear case proper, these and the clutch shaft comprising the whole of the exposed mechanism, and thus leaving the chassis quite the plainest to be seen at the Armory.

In those machines which are driven by double chains, the differential is almost universally placed in the gear box, a separate compartment usually being reserved for it. The construction of the differentials which are included in those cars which have live axles is universally neat and efficient to all appearances. In by far the greater majority of the cars, the bevel gear type is used, the spur pattern being regulated to machines of inferior quality in most cases.

Springs.

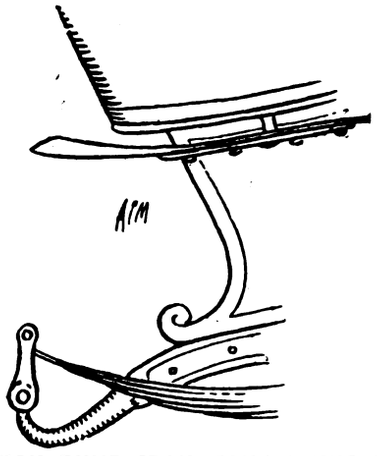
Although to the eye of the uninitiated, there is nothing radically new to be seen in the way of the spring mounting of the cars nor the general structure of the parts of the suspension, still the fact that there has been a very general lengthening out of these most important factors in the life and service of the machine, indicates to the close observer that the general run of the designers have come to recognize the beneficial results of cradling the chassis on long and easy springs of comparatively slow oscillation, and of coupling them to the frame in a manner which shall ensure to them a much greater degree of immunity from the annoying failure of through bolts and shackles, which has been a somewhat prevalent weakness in the past. Far from showing anything distinctly radical, the trend of design in that respect may be described as being a continuation of the tendencies of last year, carried out to a degree which the experience of that period would no have sanctioned.

In accordance with the extension in length of the springs, the number of leaves has been increased in many cases to give the necessary degree of strength. In one or two instances, this has been carried out to a remarkable extent, as for instance, the



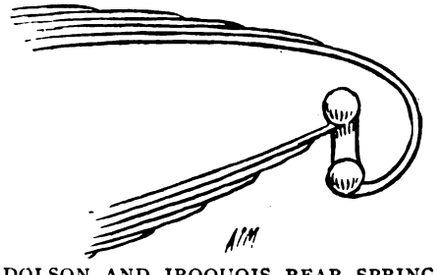
CROWN FRONT SUSPENSION.

Viqueot, in which is a most remarkable spring equipment. The front springs are 46 inches in length, and eight leaved, while those in the rear are 54 inches long, and made up of twelve leaves. By this means, the oscillations of the car when passing over rough roads are made extremely slow and



UPTON DUMB IRON CONFORMING TO BODY CURVES.

easy, and at the same time the strength which is requisite in so heavy a car, is provided. In the American Berliet, is also to be seen a very long spring equipment, the rear members having ten leaves. In the six-cylinder National, too, very liberal springs are provided, the length between



DOLSON AND IROQUOIS REAR SPRING SHACKLE.

the centers being no less than 50 inches.

From extremes such as these which are to be seen in the very heavy machines, there is a fairly uniform gradation in length to an average of possibly 40 inches on a typical two thousand pound car, as in the largest of the Mitchell cars, and the Model 15 Rambler. The number of leaves used varies as well, but not to a remarkable extent, the eight leaf type being predominant. It is noticeable that many of the makers have placed the springs off centre, at the rear of the car—a practice which though offensive to the eye in point of symmetry, yet possesses the advantage of throwing the axle well to the rear without necessitating the use of outwardly extending dummy irons. Just how general this practice has become is not of material interest, but it is by no means unusual. In at least one instance the same usage is extended to the front springs, thereby placing the forward axle well in advance of the motor.

The use of the semi-elliptic spring is still continued to a very great extent, the proportion of the whole being somewhat in the neighborhood of 65 per cent. Of the remainder, some 11 per cent. use a combination system in which the rear springs are of the full elliptic type, while those in front are semi-elliptic. The use of the platform construction in the rear, which seemed a year ago to be coming into vogue, has been but little altered, those of the foreign makers who adopted it at that time still adhering to it, such of the more substantial American machines as the Lozier, continuing to use it. The fact that its use does not seem to have increased to any great extent, by no means brands it as not being an improvement over the semi-elliptical type, since it has not been discarded by such of the reputable makers as already have taken it up. On the Austin, is to be seen the "demi-pincette" type of spring, or three-quarter elliptic.

Considering the amount of stir that has been made by the constructors of the various shock absorbers which are crowding into the market, it seems rather surprising that the manufacturers themselves are not taking hold of them and fitting them as a part of the regular equipment of the car. In the case of the Austin, indeed, a device of the sort is fitted—an original arrangement—resembling the Truffault-Hartford Suspension, which, in connection with the unusual method of suspension just cited, renders the car particularly easy riding. The imported machines are fitted with the Truffault type in several instances, though the practice is by no means universal. On the Premier, an adjustable coupling at the rear end of the full elliptic spring is provided, which may be set up to give the same general effect. In one case only are supplementary springs used, that of the Upton car, and there they are of the spiral type, and attached both to the axle and the frame. On one or two of the commercial vehicles, indeed, the use of a buffer spring is to be seen, but its purpose in such cases is simply to guard the axle from the shock caused by the blow of an overloaded body.

Brakes.

Another factor in motor car construction which is strongly marked at the Show, is the decided trend toward an increase in size and area of braking surfaces. This increase has been supplied to all the cars

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shown but possibly one or two exceptions, and in some cases has been carried to what is seemingly a degree of exaggeration, when considered in the light of what was called good practice a year or two ago. The most startling illustration of this is seen in the Viqueot, which all the way through manifests its designers' determination to sacrifice nothing to serviceability. Here, the emergency brakes are of the prevalent internal expansion type, setting up in drums of pressed steel, of which the driving sprockets form a part. The drums themselves are cup shaped and are 5 inches wide, the diameter being 16 inches. The braking force is applied through levers which in themselves are fully 10 inches long, so that the aggregate equalized effort on the wheels is far beyond the need of any possible emergency.

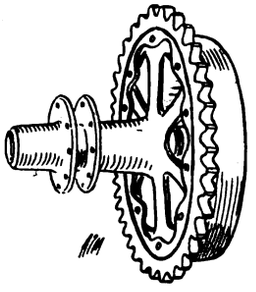
In lesser degree, the same idea—that of providing sufficient brake area so that the brakes cannot fail to hold even when in the worst conceivable condition—is manifest on a great number of machines. Among these are the National, Ranier, and the Rambler, on which latter the foot brake is enclosed within the gear case. For the emergency brakes, the internal expansion type, with complete enclosure of the working parts is largely to be found on the better class of machines. The foot brakes, on the other hand, are as a matter of structural convenience, made of the contracting type. In every case, the levers and connection are made stronger than heretofore to cope with the general increase in all around substantiality. On several of the very large machines, like the Westinghouse, two-foot brakes are fitted, both being water cooled. In some cases the water cooling effect is either accomplished by simply allowing a small quantity of water to trickle down the inner side of the rim of the brake drum inwardly turned, flanges being adapted to form a trough to retain it. In others, the brake shoe itself is jacketed, and water is caused to circulate through it, flexible connections of rubber being used for the purpose.

On many of the cars some sort of an equalizing device is used for the emergency group, the provision of a short beam linked to the lever at its center, and to the rocker-arms which actuate the two rear brakes, at either end, as in the Frayer-Miller, is particularly noticeable for its neatness of design. Another arrangement which is found on the Viqueot car is that of a cable and pulley scheme, a single tension rod running down the center of the chassis and ending in a pulley through which is reeved a cable hitched at either end to the two brake lever arms, which are bent inwardly at an angle in order to bring them into the line of tension of the rod and cable. It is a curious looking arrangement, but essentially simple and effective.

On even the very cheapest of the cars, well drawn braking devices are used, although several of the makers still persist in the use of some sort of belting as a facing for the contracting band type, and many more adhere to the use of a leather facing. There is, however, a decided leaning toward the metal to metal construction, and its general adoption, except in the flimsiest of runabouts, is to be looked for another year.

Wheels and Wheel Bases.

An an illustration of the prevailing tendency toward the use of what a couple of years ago would have been an extended wheel base, it is noteworthy that some 80 per cent. of the cars have a wheel base of 100 inches or more, and but a ragged minority of 2 per cent. fall inside that limit, they being in every case, cars of the cheaper order and classed as runabouts. In fact, as further showing the trend toward longer machines, it may be said that about half of the cars have 105-inch base or over, the lead being taken by the



CRAWFORD REAR WHEEL CONSTRUCTION.

National six-cylinder car, which thus is given an added distinguishment. Next in order of length, comes the Westinghouse, which is in every other way a massive affair, its wheels being placed 120 inches apart on centres. The American Napier, the Lozier, and the Welch, also have very long bases, while the marvelous sextuple Ford stands on a 114-inch base.

This lengthening of the base has been brought about apparently by a combination of a lengthened chassis and springs set off-centre, the former alteration being accepted by the designers in nearly every case for the provision of a more liberal amount of foot room than ever before was brought into use in any of the most pretentious of machines. Nor is this extension of the foot-board confined solely to the rearward portion of the car, but is distributed over the machine in such a way that the affect of roominess which was sacrificed, when the transition from animal to mechanical traction was made, is completely restored. Fortunately, the increase in the length of the frame has not been made so great that any increase in the number of components has become necessary, for it has enabled the designer to continue the use of a very simple structure, only using heavier members in some cases to give the added strength which is necessary. Also, the increasing use of first-class materials of construction in frame building has enabled the maker to produce chassis which are wonderfully simple considering the complexity of the duty which they have to perform. Thus, among the heavier machines, the Berliet is particularly noteworthy, while among those of more American derivation, the Ranier, and the Dorris are deserving of mention, while the six-cylinder Ford, with its arch at the rear to allow clearance for the Cardan shaft, is most unique.

Few examples of frame trussing are to be seen, one of the exceptions to the rule being the Logan touring car, to which a rather ingenious method of bracing has been applied.

A somewhat general tendency to increase the size of the wheels is to be seen, some 38 per cent. of the cars shown having 34-inch wheels, while 34 per cent. or so run on 32-inch wheels. Of the former, such machines as the brand new Aerocar, the Mitchell and the National are examples, while the Maxwell, Grout, Reo and Corbin still adhere to the smaller size. Some 10 per cent. of the makers are disciples of the big wheel, the Lozier, Austin, Welch, and Berkshire using 36-inch wheels, while the American Napier stands almost alone in the use of wheels of different size in front and rear. As has been predicted, there is a general tendency to an increase in the size of the tires used, something like 52 per cent. of the makers fitting 4-inch pneumatics to their machines, and 18 per cent. using 4½-inch tires, while a minority of 16 per cent. use 3½-inch, and only about 8 per cent. the 3-inch size, the latter being, of course, applied to runabouts. The change is very marked, giving the wheels a more formidable, albeit no less substantial, aspect. Of course, the larger sizes are more commonly applied to the types of limousine body which are so frequently to be seen at the Show, and in certain cases the more ordinary touring equipment is made lighter, but the general trend is toward a greater volume of compressed air between the wheel and the ground, take it the exhibit around.

Drive.

This is a part of the car on which change has been inticipated by the increasing adoption of the cardan shaft, and the recent accessions to the ranks of the advocates of the propeller shaft would appear to bear this sort to some extent. There are on the other hand, however, quite a few who still adhere to the double chain and so far as service is concerned there is little to differentiate between them. It is noticeable that cars of medium power, such as the Grout, rated at 28-30 horse-power, have adopted the double side chain, the Berkshire on their 24 and 35 horse-power. On the last named car is to be seen one of the fer attempts ever made to protect the chains from mud. It takes the form of a removable leather case filled with grease. The St. Louis and the Lambert, as well as the Bliss, rated at 34, 36 and 30 horse-power, respectively, also employ the double chain. In the higher powered cars such as the Viqueot, Westinghouse, the Berliet, the Chadwick and the Acme, all of which top the 45 horse-power mark, the use of the

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double chain is, of course, still general. There are, however, cars the rating of which forms an approach to this mark which use the cardan shaft, such as the Frayer-Miller, National and Ford six-cylinder models.

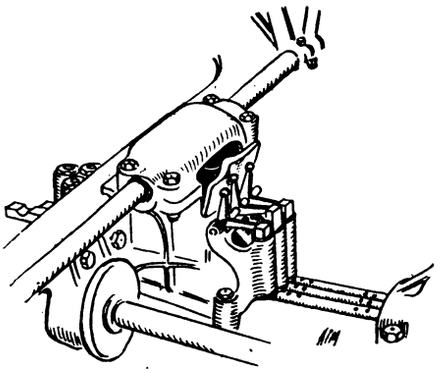
Among the air-cooled cars the shaft drive is practically universal such as the Premier, Marmon, Aero and Corbin. The use of compensated tension rods has become more general, this being well worked out in the Premier and the Corbin by suspending the inner end of the rod from a vertical piece attached to the cross member of the frame and upon which it may move up or down, controlled by a strong helical spring placed on either side of it. The universal joint is likewise a feature that has been multiplied in proportion to the increased use of the shaft although an additional use has been found for it between the clutch and gear box where it is of great value in preserving the alignment of the former whether it be of the multiple disc or cone type.

Then there are the gears of special design, such as the Lambert and the Windsor in which the chief feature of the transmission is the use of friction, the final drive in both being with double side chains.

Safety Devices.

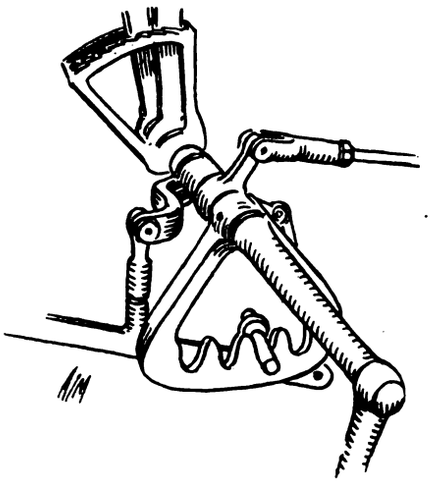
It is noticeable that an increased number of makers have borne the novice in mind in adding those final touches to the operating mechanism that mean so much to the comfort of the driver, whether he be inexperienced or otherwise. The Mitchell, National and Reo, as well as the Moon, employ a gear locking device interconnected with the clutch so that the latter cannot be engaged between gears, while one or two, notably the Lozier, the Acme and the Napier, are provided with sprags, this being a feature that is well worked out in the Lozier. The sprag is of the ratchet in the case type and is thrown by hand with a small lever located next to the emergency brake. It is automatically released by throwing in the reverse so that there is no danger of attempting to run backward with it on. The latter is also true of the Acme.

There is one item in this connection the settlement of which appears to be as distant now as ever and that is whether the pedal brake should throw the clutch. There are so many upholders of each side of the question that there is not much to choose between them in the way of advantages; it is a matter of personal preference which shall be fitted in the majority of instances. One radical as well as quite novel departure which is in fact, but one feature of a very cleverly designed car in every particular, is the expedient employed on the Dorris. It may be termed the single pedal control, both clutch and brake being connected to the same pedal. Pushing the latter a certain distance disengages the clutch and further movement in the same direction applies the foot brake. The emergency brake on this car sets all the brakes simultaneously. The Stoddard Dayton also employs interconnected pedal control by hitching the throttle to the pedal brake—when the latter is depressed the engine is throttled down, the clutch also being interconnected with the



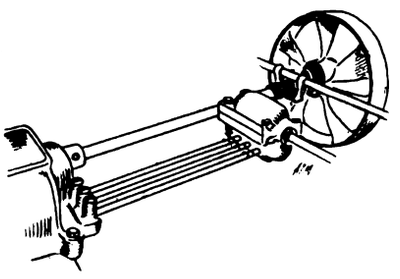
WESTINGHOUSE GEAR INTERLOCKING DEVICE.

governor, thus effectually preventing racing when the clutch is out. This is likewise a feature of the Iroquois car.



NATIONAL GEAR CHANGE INTERLOCKER.

But the diversity of opinion as to brake and clutch interconnection does not extend to the emergency, which is with rare exception, made to release the clutch. One of the cars upon which every operation is carried out independently is the Upton. On the Mitchell two-cylinder runabout, the pedal brake and clutch are interconected as also on the Cleveland, the Premier, Jackson and Bliss, all these four having both brakes interconnected.



AM. BERLIET GEAR INTERLOCKER.

Ignition.

In the matter of ignition there seems to be a tendency on the part of builders of cars, the price of which allows liberal leeway for experimenting, to regard this as a feature of the car which is far from settled—that it will henceforth be a struggle for supremacy between the renaissance of the low tension system and the high tension which is at present now so universal. But to particularize—to get down to the cars shown in the Armory, the reverse is found to be true to an extent that makes the first statement appear to be entirely unfounded, for a close scrutiny of all the American cars staged there reveals as close an approach to uniformity in this respect as it is possible to attain; there always will be an occasional exception. American designers, as a rule, have considered this a matter best left to the care of those who have made it a specialty. How very prevalent this dependence upon the maker of electrical apparatus has become may be realized from the fact that in the minds of many of the attendants, the entire ignition system means nothing more than the name of the maker of the coil or some other part. A question as to the form now used rarely elicits anything more than "Splitdorf" coil, "Autocoil," "Connecticut" coils, or the like.

Contrasted with but a year there is a change to be noticed; there have been more accessions to the ranks in that time and they have tended to bring about a still greater degree of uniformity—one measured largely by price. Given any ten American cars of approximately the same price and few of them will differ in the slightest in this respect.

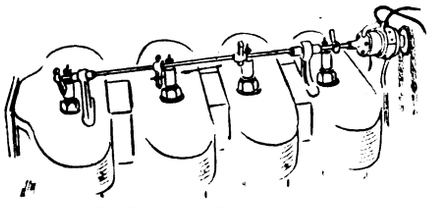
It may be wondered how the various idiosyncrasies of the individual purchaser are met by anything so closely approaching universal uniformity, but in this respect the manufacturer is open to any suggestions that do not entail revolutionizing the system entirely. In numerous instances he is perfectly willing to give the buyer his choice of the small direct generator, dry cells or accumulators and in the case of the National car in both the four and six-cylinder models, he gets all three anyway. The improved Apple igniter and storage plant are employed, the same as last year, but the location of the dynamo as well as its drive have been changed for the better. The machine is mounted in a vertical position on the face of the dash-board with its friction wheel bearing against a specially beveled face of the flywheel. This location brings the commutator casing just above the level of the foot-board which permits of ready inspection. Electric side and tail lights are employed and two sets of accumulators are provided on both the four and the six-cylinder models.

This matter of giving the purchaser his choice in this regard, while nothing particularly new, though now much more general than previously, brings out another thing very strikingly and that is the manner in which the popularity of the accumulator

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for ignition purposes has increased. But two years ago it was viewed askance even by a great many to whom the increased cost did not figure as a detriment. They evidently seem to have come to it in the interim, for now it is apparently a matter of indifference to the maker which he employs and on the cars of the touring type the accumulator is predominant. For instance, out of 39 cars that may be termed purely American, that is, designed and built in this country, more than 20 include accumulators, many using two sets, the Acme, National and a number of others, while the remainder are, in the majority of instances, willing to include them if the new owner of the car wishes to so specify.

Despite the many predictions as to the coming of the magneto on the lower priced car, it is remarkable to note that on the 39 American cars in question the progress made represents but a very insignificant fraction of the whole. Of this number but five or less than 15 per cent. of the total have declared themselves in favor of the alternating current generator, which is with one exception of the high tension order. One of this number, the Frayer-Miller, does not include a magneto as a standard part of their equipment, but it is made optional on the six-cylinder model. The six-cylinder Ford is simplified to a great extent by the adoption of the Holley magneto. The Holley magneto is also a feature of the Grout car. The single exception to the prevalence of the high tension advocates is represented by the Cleveland, employing the Simms-Bosch low tension with make and break igniters. The La Coste high tension is fitted on the Lozier and the Rainier employs the same make as the Cleveland but of the high tension system, while the Austin carries the Remy. Both of the latter use accumulators with multiple coil in addition. On cars that may be termed of "foreign extraction," such as the Bliss, the American Berliet and the Napier, or which are built abroad by American capital such as the Viqueot and the Westinghouse, the use of the magneto is universal. In the case of the Viqueot this is the Eisemann high tension, while on the American Berliet the low tension with make and break is adhered to; the La Coste of the high tension type is used on the Bliss, while the Westinghouse employs the Simms-Bosch high tension. In passing it must be remarked that some of the much lauded features of but a year or two since have all but passed away unmourned. One of these was the placing of the commutator or distributor on the dash-board where it would be plainly visible. Of the 39 cars but one has this feature and it is an entirely new entrant into the fold. As a means of simplifying the wiring as much as possible, it was noticeable last year that many had placed this essential at the top of a vertical shaft level with the upper ends of the cylinders, with the drive taken from the cam shaft through a bevel gear. This is now almost universal and the commutator is placed generally at the rear of the motor except in those cases where some special feature of the design of the motor makes a change result in improvement, as in the Mitchell, where it rises at an angle from the side of the motor about six inches or so to within easy reaching distance and makes it very accessible, or in the six-cylinder Frayer-Miller, where, owing to the length of the engine, the purpose intended has been fulfilled by placing it at the side about the center of the motor. It is also vertical in this instance, but owing to the special design of the air-cooling jackets is only carried a few inches above the level of the cam shaft, which renders it both easy of access and convenient to wire. The Berkshire is one of these exceptions, but differs only in having the distributor lying horizontally. A feature of interest in this connection that should not be overlooked is the use of this vertical spark timer shaft to carry the governor acting on the ignition, a method of procedure very cleverly worked out on the National on which it is an exclusive feature.



YORK PULLMAN IGNITION SYSTEM.

Another of the features of which a great deal was expected a few years ago was the use of but a single coil on the four-cylinder motor with a commutator on the low tension side and a distributor on the high. That experience would seem to have decided against this form except where there are other controlling circumstances, would appear self-evident when it is stated that out of 39 cars, but five now use it, and, as already stated, its adoption is dictated by convenience or where this forms but an auxiliary, as in the case of the Grout as a standby to the magneto. Such cars as the four-cylinder Maxwell, the Rambler and the Reo, of the same type, the Aerocar, the St. Louis, the Premier, Stoddard-Dayton, Queen and Wayne, employ the multiple coil which has the great advantage of making it easy to get home on two or three cylinders, should one or more of the coils break down simultaneously, or where a spare unit is carried as is often the case, of making light of an accident to one coil.

On one or two cars, such as the National and the Upton, it is convenient to ascertain the condition of the battery at any time by merely pressing a button which puts the cells in circuit with a small voltmeter mounted on the dash.

To sum up the situation briefly, the American maker of the medium priced car is determined to stick to his recognized standard—the high tension system with multiple coil and batteries, something what he can employ in the highest grade manufactured without paying a disproportionate price, instead of experimenting with the more expensive methods that may or may not prove superior.

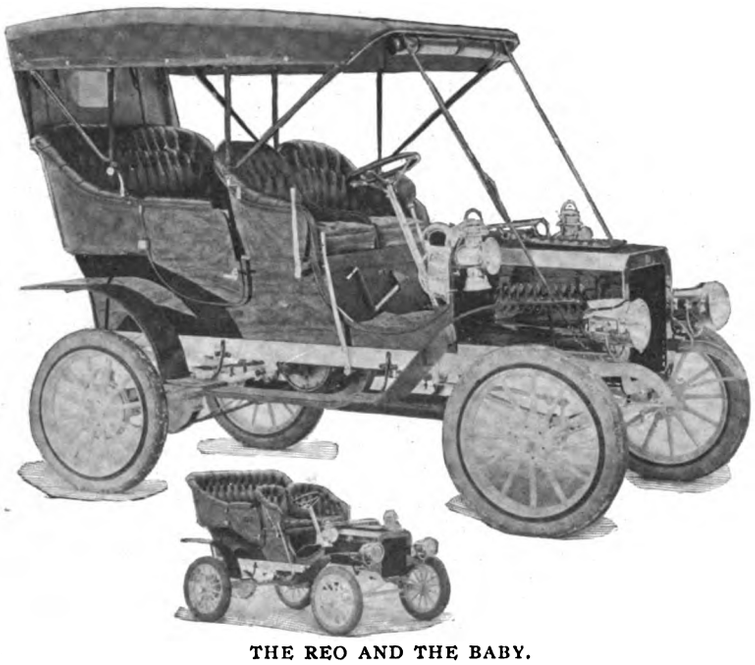
Without doubt the most novel form of ignition was found on the York car, or York Pullman, which is its full title. This is a most ingenuous arrangement, very cleverly worked out. The plugs are centered in the heads of the cylinders and merely terminate in a point projecting slightly above the ordinary binding post. There are no wires or any connection whatever visible. Just above the four plugs in line, and slightly to one side, is a light horizontal shaft carrying four brass fingers, so spaced that each one comes opposite its corresponding plug when the cylinder is to fire. This shaft is rotated by sprocket and chain from the cam shaft, and also carries on its end a four-point distributor in circuit with the coil and battery, thus making the system particularly simple. The contacts in the distributor also correspond with the brass fingers on the shaft so that as the latter come opposite the plugs in turn the current passes. A slight gap is left between the finger and post of the plug, which obviates wear.

Something that conduces to certainty of getting home in case of accident to the ignition, is the provision of two independent sets of plugs with wiring on the Austin, one set being run from the magneto and the other in circuit with the accumulators and multiple coil. Such little refinements as this and the others already dwelt upon are, of course, more in the nature of auxiliary standbys and their value is not fully appreciated until the occasion arises. These and the little conveniences here and there which reveal the amount of attention devoted to making his product as complete as it is impossible to do so by the manufacturer, may be taken as an indication of the close study that is made of the owner's wants.

Details.

It is interesting for the critical observer to closely study the various cars with an eye to detecting the presence of those added refinements, some of which are pure utilities and others a matter of comfort or at most increased convenience. On the Frayer-Miller and the National, they take the form of a voltmeter placed on the dash in order to make it easy to ascertain the condition of the batteries at a glance by merely pushing a button. On the National also there is a feature that should prove a convenience on all cars with a gravity feed and that is a small auxiliary tank, in close promixity to and slightly above the level of the carburetter. This contains sufficient fuel for ten miles running so that there is no possibility of being stalled on the steepest hill, no matter how low the fuel level in the main tank may be. Another feature of the same car is the greatly added convenience brought about by the adoption of an improved method of fastening the pan beneath the car. In the first place this is so formed that it does not cover the bot-

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THE REO AND THE BABY.

tom of the crank case of the engine, and the latter may accordingly be removed without disturbing the pan. When necessary to examine further back it is only necessary to unclip six springs instead of as formerly, by extracting numerous bolts.

To facilitate starting it is noticeable that a compression release has been provided in several instances, such as on the Glide, the Moon and the National. This also greatly lessens the amount of labor necessary when the engine refuses to start on the first turn or so.

Electrics.

Electric vehicles, whether for pleasure or commercial purposes, were not expected to form a very large part of the Armory Show, but it was not only noticeable that they punctuated the rows of stands of gasolene cars here and there, but that they were productive of several novelties. Without doubt as complete a showing of electric pleasure cars for winter use to be found under either of the roofs that has been sheltering the aggregations this week, was to be found at the Baker stand. Here were to be seen the most complete and luxurious types of the electric Imperial, the Stanhope, surrey, brougham and station wagon as well as the runabout. With their luxurious appointments that include the last word of refinement in detail of everything that can conduce to the comfort of the passenger, they form an exhibit that appeals very strongly to those seeking a vehicle for purely city work. Where the passenger is at the sametime the driver, he is catered to by having the control inside and nothing could be more snug or comfortable in bad weather. The shaft drive has been more generally adopted, this together with other improvements in mechanical detail as well as a better distribution of the weight conducing to increased efficiency.

As a matter of fact, the electrics provided one of the surprises of the Show in the shape of the Lansden runabout, the appearance of which attracted a great deal of attention. This car is unique in more ways than one. It is not only the first high-speed electric to be placed on the market as a stock article, but is also the first pleasure car to use the improved Edison cells as the source of motive power. Sixty cells of 110-ampere hours capacity, or the same battery as is employed in the one-ton Lansden electric truck.

The weight has been extremely well distributed by placing the battery under a long and slightly sloping deck in front, with the motor and divided seat at the extreme rear. The motor, which is nominally of three horse-power has an overload capacity in excess of 20 horse-power, drives to a countershaft about midway of the body, from which long side chains are taken to the rear wheels in accordance with estab-

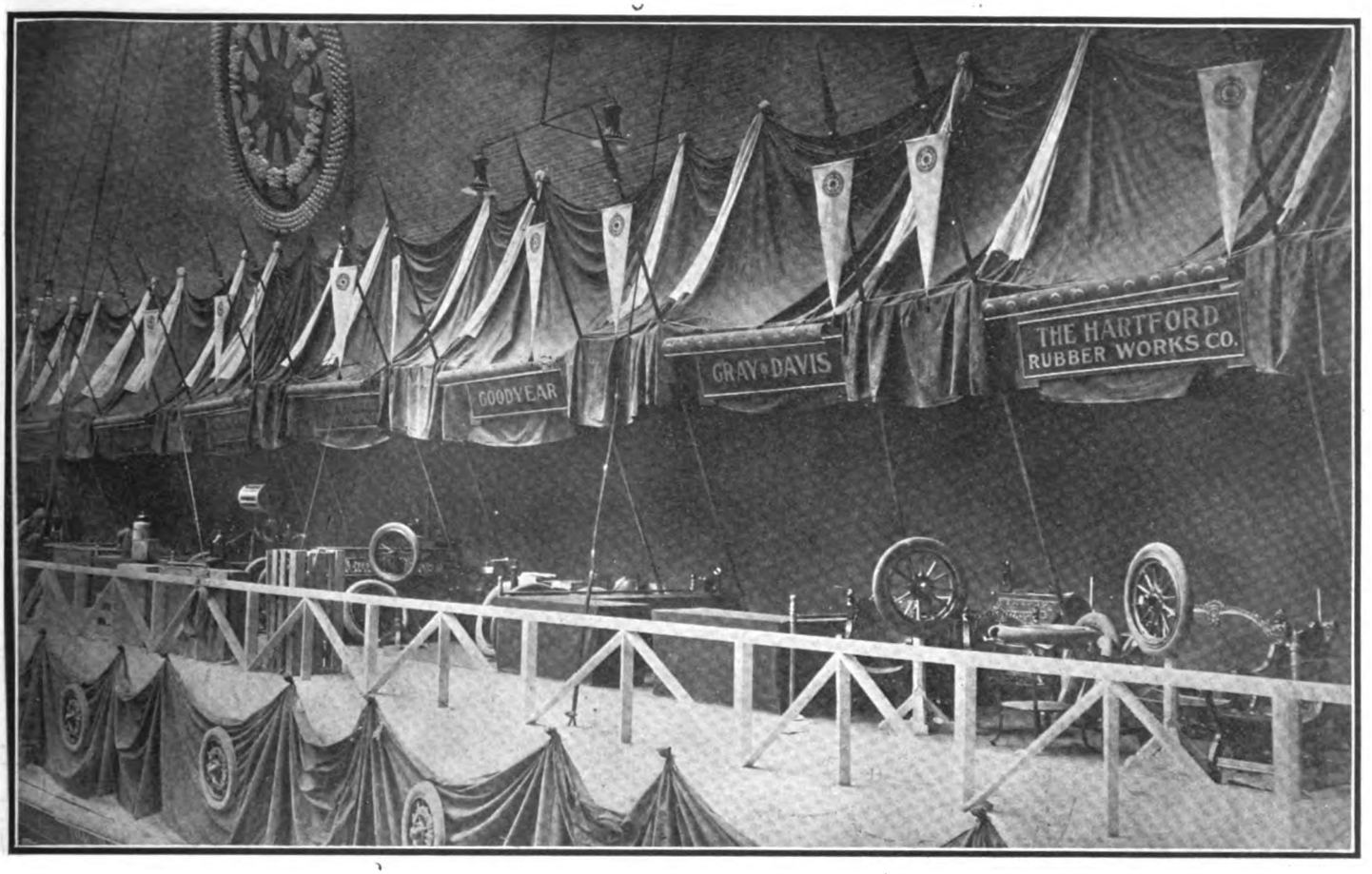
Co., and which is found to give very satisfactory service on commercial vehicles. The batteries are guaranteed to give 60 miles on one charge at an average speed of 25 miles an hour, which represents the top notch in this respect. A wrinkle that will be appreciated by the driver who suffers from cold hands is the provision of electrical hand warmers on the steering wheel. These may be turned on or off at will by pressing a button. Equipped with four-inch pneumatics shod on the rear wheels with steel studded non-skid bands this car sells for $1,800. The same concern also shows one of its electric trucks of the type adopted by several large concerns and used in number with great success.

Probably the greatest misfortune that ever falls to the lot of the exhibitor came to the makers of the Pittsburg electric delivery wagons. After engaging the space and paying the freight and other expenses incidental to bringing a heavy electric delivery wagon all the way from Pittsburg, it was found that it lacked but a few inches of being low enough to pass down the runway to the basement. As the top was a permanent one, there was no alternative but to ship it back. This firm's exhibit accordingly was confined to a light delivery wagon with a capacity of 800 pounds, equipped with 24 cells of 11 M V Exide battery and a 3 horsepower Westinghouse motor driving to the rear axle through a single chain.

Another exhibit of electrical vehicles in the basement was that of Rauch & Lang, who show a runabout, a depot carriage and a surrey. The runabout is equipped with 24 cells of the Willard battery of 108 ampere hour capacity in connection with a Hertner type A, one horsepower motor. The power from the latter is transmitted to the rear axle by chain. Three brakes are provided, one of which is electric. On the depot wagon a Hertner motor of the same type but of 2½ horsepower is employed. The same battery equipment is used on all



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"ACCESSORY ROW" ON THE GALLERY.

three types the volume and intensity of the current being altered in order to vary the speed by commutating the battery instead of employing resistances, thus preventing any waste of current through the latter source.

SUNDRIES

To give a complete résumé of the sundries display in the Armory would be to repeat the story of the same display in the Garden, for most of the accessory makers found it advantageous to display their wares at both shows. With but few exceptions, and these not of a noted character, the same houses are represented in both places.

A visit to the display of Charles E. Miller, the official sundry purveyor to the Automobile Club of America, in Room B, in the balcony, who here has a more ostentatious display than at the Garden, is equivalent to "doing the round" of accessory booths. Here the visitor may see almost everything devised for the motor car and save himself miles of walking, besides burdening himself with an endless accumulation of literature, for Miller's catalogue, enclosed in an envelope for convenience's sake, contains a fund of information for the prospective buyer. There are just two electric horns on exhibition, and one of these is shown by Miller. It is useful as well as novel, as buttons can be attached to any part and the horn sounded by any one in the car. It is an application of the principle of the telephone transmitter, the electric current from a dry battery furnishing the power to sound the microphone. The other horn is shown by the Hutchinson Electric Horn Co., of New York City. There is another novelty in the way of a siren horn which is shown by Miller, the Dac Automobile Supply Co., the Uncas Specialty Co. and the Motor Car Equipment Co., all of New York City.

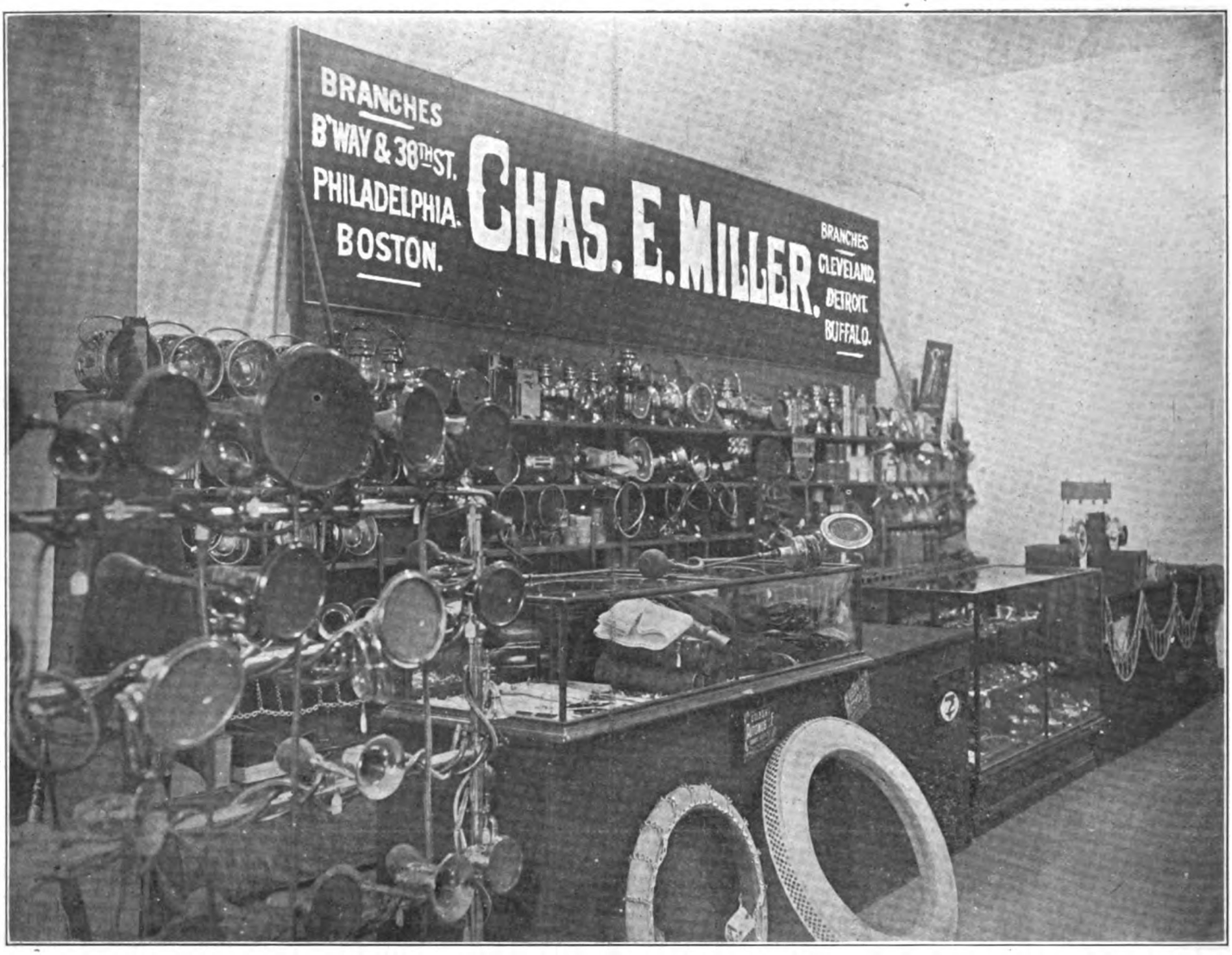
A new shock absorber is on the stand of the Dac Automobile Supply Co., but whether it can be called original or not is doubtful, for it is but one of the many various methods of employing friction for this purpose. A contracting band on one arm which goes around the hub of another arm and which is held in place by a helical spring, furnishes the resistance. The ends of the arms are attached, respectively, to the spring and the chassis of the car. Another absorber in which compressed air furnishes the cushion is being exploited by the Sheddan Mfg. Co., of Baltimore.

A little machine that has attracted more than passing interest is a combination tool, the product of the Detroit Tool Co. It is designed for those who would do their own repairing and also for small garages. It comprises a forge, with geared rotary blower, anvil, vise, pipe vise, emery wheel, drill press, vise clamps, anvil hardy, crucible holder, twist drill and tongs, and it is sold at a remarkably low figure.

The well known line of Excelsior lubricants is on the stand of Wm. P. Miller's Sons, and the R. M. Hollingshead Co., of Camden, N. J., is a newcomer in the lubricant field. The "B" line of motor oilers is shown by the Randall-Faichney Co., of Boston, Mass., and the Gleason-Peters Air Pump Co., of New York City is exhibiting its line of famous tire pumps. Although not a new firm, the Kinsey Mfg. Co., of Dayton, Ohio, has several new sundries on show, among them being an ingenious water and dirt filter and gasolene indicator to be put in the gasolene tank. The firm also has a new radiator with flat vertical tubes, the fins being of copper; and a mechanical force feed oiler, all these being made under the Kehoe patents.

There seems to be an overabundance of devices designed to protect the motor car owner from the meddling hands. F. A. Goebel, Marietta, Ohio, has the "Snap-It" lock switch which work with two keys; when the current is turned off the switch is locked. The Lock Switch Mfg. Co. is showing a device upon somewhat the same lines. This also has an ingenious tire pressure regulator, 2½ inches long, to measure the exact pressure in a tire, whether applied after inflation or during the operation, and enables the operator to determine the precise pressure the tires are to receive. To

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MILLER'S OWN ACCESSORY SHOW IN ROOM B.

obtain a desired pressure during inflation the pressure regulator is set by the scale to the pressure wanted, then placed in position between the valve stem and pump nozzle, permitting the air to enter the tire. The controlling valve operates to check the inflowing air and permits the blow off valve to open when the predetermined pressure is obtained. If it is desired to ascertain the correct pressure after inflation the instrument is screwed to the valve stem, after the regulator is set, the escape valve mechanically opening if the tires are too hard, allowing the air to escape until the correct pressure is attained, when the valve mechanically closes. A safety device which locks the bonnet and circuit at the same time is displayed by the Auto Lock Plug Co., of New York City. The company is showing a single lock plug which can be attached to any Splitdorf plug. All the devices are fitted with Yale locks and keys.

Stevens & Co., of New York City, are showing an imported speedometer—the Esco, which is hardly likely to become very popular by reason of its clumsiness. A new speedometer to make its debut to the public is the Hoffecker, manufactured by the Rollins Mfg. Co., of Boston. It gives the miles per hour, the miles per trip and the total mileage. It is operated by a flexible shaft attached to the front wheel of the car. The Hicks speedometer is exhibited by its makers, the Hicks Speed Indicator Co., of Brooklyn.

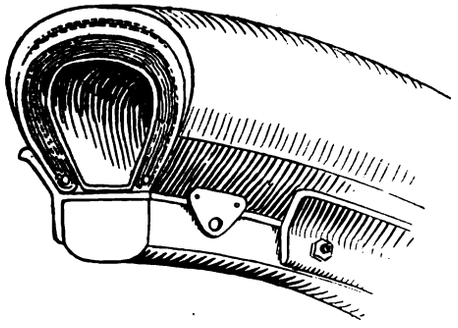
A new style of goggle is shown by the Mills Mfg. Co., New York. Last year goggles were made for persons with defective eyesight, the lenses being made in the goggle to suit the needs of the wearer. Mills comes forward with a theory that the lenses fitted this way tend to injure rather than help the eyesight, and his method is to fit the magnifying or reducing lens, as the case may be, into the plain glass mirror of the goggle, the lenses being set close to the nose bridge.

Among the other sundry dealers who are showing at the armory and who are not represented at the other show are the following: Scott Muffler Co., neck mufflers; William M. Poz, waterproof garments; Carbondale Chemical Co., non-freezing solution; Survey Map Co., maps; Robinson Fur Co., furs; Teel Mfg. Co., wind shields, tire covers and monograms; Theodore Audel & Co., technical instruction books; John Boyle & Co., leather hampers; William Hiram Brown, dust shields; Hill Mfg. Co., tops; Cook's Railway Appliance Co., standard jacks; Belden Automobile Transmission, gears; Gearless Transmission Co., friction transmissions; Bullard Automatic Wrench Co., wrenches; Le Nonpareil Muffler Co., mufflers; Safety Electric Elevator Co., elevators for garages; Crouse-Hinds Co., communicator and distributor; Never-Miss Spark Plug Co., spark plugs; Duplex ignition Co., spark plugs; Electric Storage Battery Co., exide batteries; Francois Richard, automatic combination alcohol, kerosene and gasolene carburetters; B. Morgan, carburetters; Kirkham Motor Mfg. Co., motors; Aster Co., motors, chassis, carburetters and ignition outfits; the Westinghouse Companies, Cooper-Hewitt mercury arc rectifiers, and automatic compressed air outfits for garages.

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TIRES.

It goes without saying that the tire manufacturers did not "play favorites." They were in force at both shows. There was but one tire of moment absent, and it was awaited with unusual interest, and almost certainly would have been at the Armory only—the Ajax. That

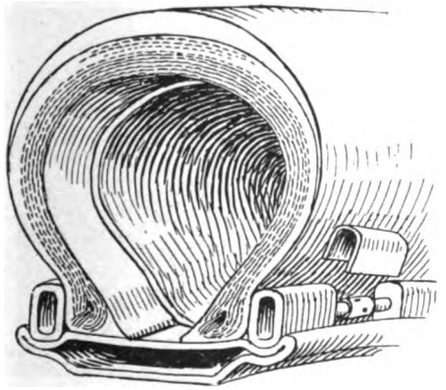


FIRESTONE.

tire, for which so many of the "independents" are standing sponsor, was not quite ready for showing.

The one brand new pneumatic tire that made its appearance was the Firestone; the one new solid tire, the Diamond, with its wire mesh base; and never were manufacturers more earnestly enthusiastic over their new wares, and, curiously enough, the makers of the Firestone long have been famous for their solid tire, and the makers of the Diamond equally famed for their pneumatic.

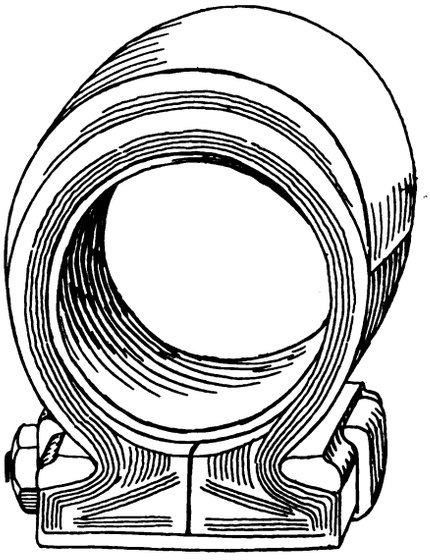
The Firestone follows the now popular trend, that is to say, it employs a mechanical fastening, which is a notable addition to the fund of ingenuity that has been centered on that form of tire facility. The tire itself is formed of successive layers of fabric and rubber. A wire cable is inserted in each edge of the tire and the layers of fabric pass around these cables. This insures holding the tire rig-



M. & W. DUNLOP.

idly in place at all times. Non-corrosive "ears" or clips are riveted to the tire at regular intervals with rivets which have large, smooth heads. The felloe bolts pass through these clips as well as through the wood felloe and steel side flanges, insuring utmost rigidity when the tire is in place. The tire is detached simply by removing the nuts from the bolt and withdrawing the bolt itself. The rim and flanges being narrower than the tire itself, are claimed to make for better behavior of the tire in sand or mud, while the fact that the flanges may be applied to any standard wheel is a point of which the most is made, as also is the case of the outward flare of the flange, which is insurance against rim cutting.

While the clincher type of tire is still deeply rooted the trend toward mechanically attached tires is, of course, and has been, apparent during recent months, unmistakable. Only the Diamond, the Pennsylvania and the International, of the American tires, and the Michelin, of the French tires that are in evidence absolutely "remain true to Poll," that is, to the clincher fastening. The Fisk and the Goodyear were earliest in the new field; the show of 1905 saw the Hartford with a removable ring, and during the year Goodrich, G. & J. and Morgan & Wright, if they have not entirely crossed the divide, have so placed themselves that they may at will travel on either side of it, while Firestone crossed it at the first bound.



FISK.

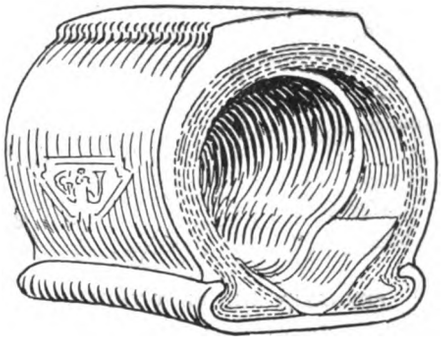
In the face of such accumulated evidence the mechanical fastening easily may be reckoned the development of the year.

The B. F. Goodrich Company's fastening is a development of the last three months, and was seen by very many at the show for the first time. It consists essentially of a rim with a removable and split flange or locking rim having two lugs, which engage in a bayonet lock slot in the rim. No bolts or nuts whatsoever are employed, and removing the rim and the tire is merely a matter of seconds.

The Hartford Rubber Works Company's fastening is a fastening "full grown." It was one of the sensations of the show of 1905, but that most crucial test, the test of time and extended usage, showed how it could be bettered, and the perfected Hartford-Dunlop fastening, or rather rim, is the result.

The principle of the new rim is the same as the 1905 Dunlop, with the exception that the turnbuckle works from the under side, the groove or channel in which the bead rests being cut out at one point to allow the turnbuckle to slightly protrude, as can be seen by the drawing. The channels themselves are made a trifle deeper than heretofore, which affords a more positive adjustment of the beads. This, however, does not tell the whole story, nor convey a true idea of how far the improvement reaches, for, as a matter of fact, it permits any clincher tire to be applied to the rim merely by reversing the beads in the channel—a factor of interchangability that is not to be minimized.

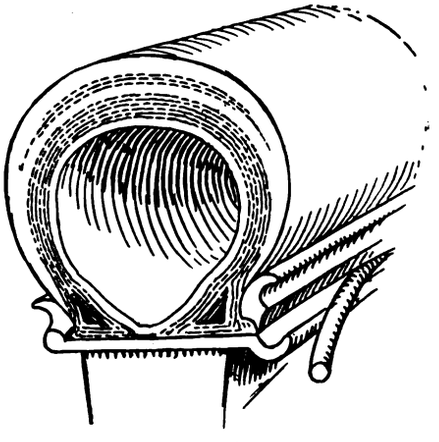
Another new and novel feature of the Hart-



G & J CLINCHER.

ford-Dunlop is the floating ring, an endless band made of light metal heavily coated with zinc to prevent rusting. This band has sufficient allowance over the diameter of the rim at the tire seat to insure ease in placing the tire and floating ring on the rim in one operation, the ring being practically part of the tire. When the tire is in place its inside edges bear against the outside edges of the floating ring. Then when the metal bead is drawn down into the gutter by means of the turnbuckle it wedges against the outer wall of the casing and prevents water entering the tire. In addition to sealing the tire, this floating ring is in effect an endless lug without the latter's drawbacks. It is a positive non-creeping device.

While most of the clincher tire makers advocate the use of lugs, the G. & J. Tire Co. continues to make their clincher with a flap and to urge its use without lugs or clamps of any sort. They are also presenting for the first



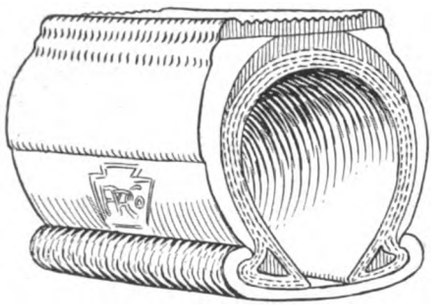
GOODYEAR.

time the Indianapolis Dunlop tire, which incorporates the perfected Dunlop mechanical fastening. Both tires are termed wrapped tires, in contradistinction to the wrapped tread construction which they employed last year. The tires are cured in open steam in one operation, which makes for greater durability. Tires with

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flat treads are also being offered for the first time; likewise a complete line of sundries, such as protectors for spare tires, tube bags, horn bulbs, etc., in addition to the usual repair outfits.

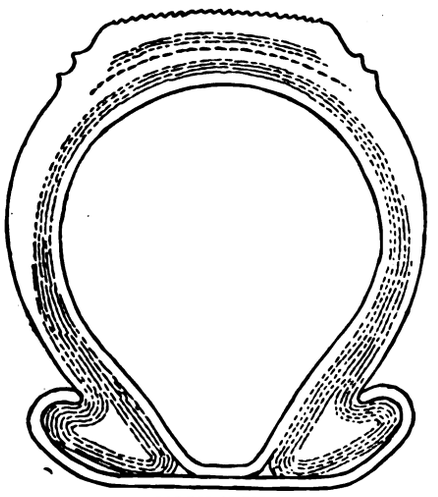
Morgan & Wright, like G. & J., are branches of the same family tree that shelters the Hartford tires, and, like them, are making not only



PENNSYLVANIA FLAT TREAD.

clincher tires, but Perfected Dunlop mechanically fastened tires as well. There is a deal of keenest rivalry between the three plants in respect to producing the best tires, and in the matter of comparison it is trade talk that Morgan & Wright do not suffer.

Aside from the Fisk mechanically fastened tire, a smile of satisfaction and significance is the chief exhibit at the Fisk booth. The Fisk Rubber Co. were the first people to seriously and strenuously take up and advocate the mechanically fastened tire, and the rush in that direction during the past year has caused them to acquire a smile that shows no signs of wearing off. "Changes? Improvements? We made ours a year ago," is the way J. W. Bowman, of the Fisk staff, answers those questions when they are put to him; and then he resumes his

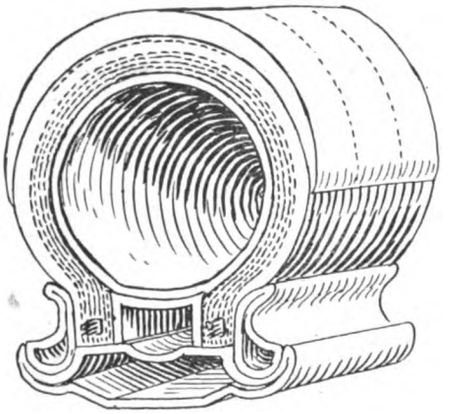


MICHELIN.

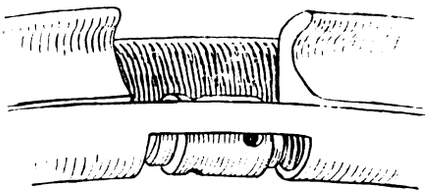
smile. There is, however, something new in the Fisk exhibit—a red inner tube, which is claimed to be the last word in respect to quality.

The Diamond Rubber Co. are now furnishing their famous wrapped tread tire with a flat tread, when it is desired, but it is in the matter of inner tubes that they have made a striking departure. They present at the show for the first time their new diaphragm tube, which is essentially a tube within a tube, the interior tube being for emergency use. It is secured to the outer one for about six inches and lays deflated within it when not in use. There is a separate valve for each tube, placed on opposite sides of the tire, and in case of puncture to the tube in use the pump is applied to the valve of the inner tube and it is inflated without the usual stop for repairs. The idea of the tube is not wholly new, but its adoption by a concern of such wide reputation as the Diamond Rubber Co. will give it a standing none of its kindred of bicycle days ever attained.

The new Diamond solid tire, with its wire mesh base, is, however, a distinct novelty, which its makers believe cannot fail of extended use. The wire mesh is moulded into the



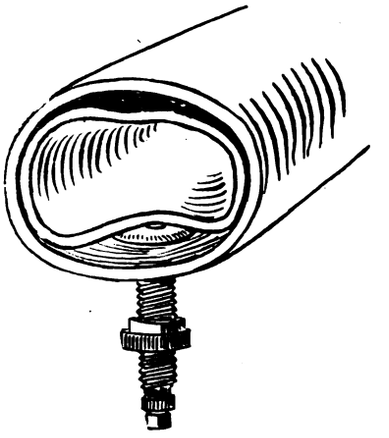
HARTFORD DUNLOP.



base of the tire and absolutely holds it and all of it in the rim without any tendency to "curl" up at the sides and leave the rim, as the Diamond people say is the case with sidewire tures.

Further perfection of the fastening of the Goodyear mechanically attached tire also has been made. It may be a stretch of the imagination to term it a perfection, for it is one of those little alterations which in themselves are comparatively insignificant, yet it is by no means to be overlooked on that account. It consists of the placing of a little nib on the end of the locking ring of the universal rim in such a way that it is now impossible to apply it except in the proper way, with the ends at the valve stem. An addition the Goodyear Co. has added to its line is the Heine Non-Skid Tread, which has just been brought out. It consists of a heavy rubber tread, in which are a series of cup-shaped depressions, spaced equally about the centre of the tread. In these are circular metallic caps and washers, topped by nuts, which bind them in place by means of studs, to which they are secured and which extend through the tread to anchor pieces, also of metal, arranged beneath, but out of contact with the tread. The construction is such that it may be adapted to any type of shoe by a simple process of re-treading.

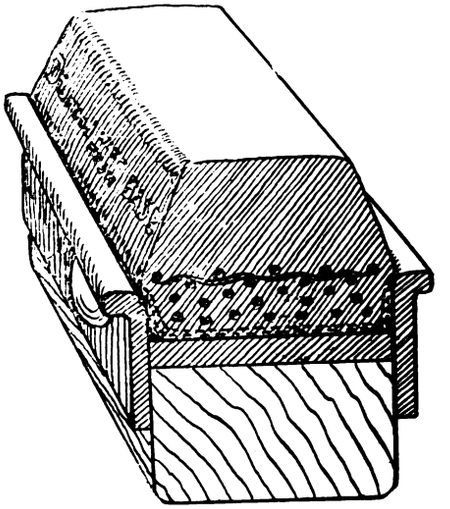
The International clincher tires are put out this year in a new section, in which the layers of fabric are interspersed with layers of pure gum in the form of a skim coat. Between the skeleton and the tread is a similar layer of



DIAMOND DIAPHRAGM TUBE.

pure rubber fully an eighth of an inch in thickness. This construction prevents the layers from separating and the tread from peeling off under heavy usage. The International tires are now made in the round shape for the first time, on account of which the liability to rim cutting is reduced to a minimum. The clincher bead is made exceptionally large, and the shoe completely fills the space beneath the tube and over the rim, thus thoroughly protecting the tube at all points.

The Pennsylvania Co.'s clincher tires remain unaltered; the nearest approach to innovation



NEW DIAMOND SOLID.

is a flat tread racing tire with a corrugated surface.

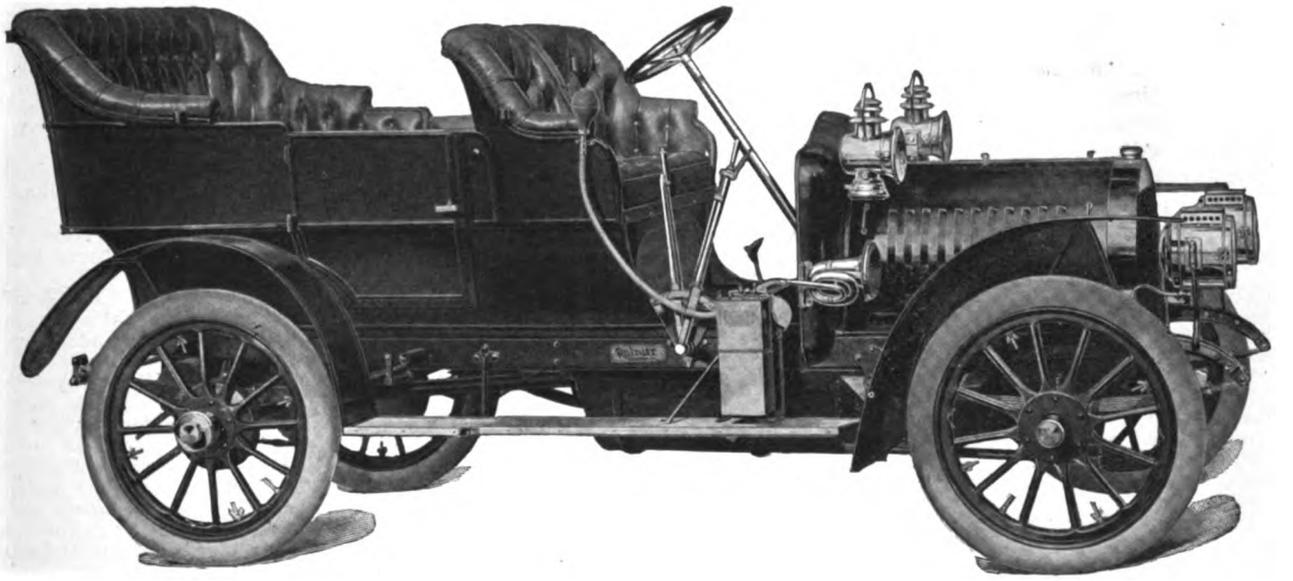
The Michelin tire is, of course, very much in evidence. The Continental is also to be found, likewise the Swinehart and Motz, the latter two of which are solid tires of the clincher type. There is also the Sampson leather tire and the usual number of leather treads and anti-skids which are rarely seen or heard of outside of the shows.

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Rainier

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1906 Catalogue and Cars Now Ready.



1906 MODEL B, 30-35 H. P. PRICE, $4,000.

GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

During 1905 the Rainier was the hit of the season in New York, the most critical of markets. Not a single dissatisfied customer, only favorable comments everywhere, and orders galore for the new model from former users. Before you decide, investigate the Rainier, carrying the world's broadest automobile guarantee.

Make and break spark. Simms-Bosch Magneto. Bevel gear drive.

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Boston Agents: MORRISON-TYLER MOTOR CO., 121 Massachusetts Ave.

Good Agents wanted in unassigned territory.

The Rainier Car will be exhibited at the Armory Show in Chicago.

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SUMMARY OF CARS AT ARMORY.

PLEASURE CARS.

Gasolene:	
Two cylinder	26
Three Cylinder	5
Four cylinder	115
Five cylinder	1
Six cylinder	3
Total gasolene cars	150
Chassis:	
Two cylinder	4
Four cylinder	42
Six cylinder	1
Total chassis	47
Steam	10
Electric	8
Total pleasure cars	215

COMMERCIAL CARS.

Gasolene	11
Electric	2
Total commercial	13
Total gasolene vehicles	208
Total electric vehicles	10
Total steam vehicles	10
Total all cars	228

Acme Motor Car Co., Reading, Pa.—Acme gasolene cars, 4-cylinder chassis, 4-cylinder touring car, and 4-cylinder limousine.

Aerocar Co., Detroit, Mich.—Aerocar, gasolene, air-cooled 4-cylinder chassis and 4-cylinder touring car.

American Locomotive Automobile Co., New York City—Berliet gasolene cars, 4-cylinder chassis, 4-cylinder touring car and 4-cylinder limousine.

American Peugeot Automobile Co., Passaic, N. J.—Peugeot gasolene cars, 4-cylinder chassis, two 4-cylinder touring cars.

Andrews Douglas Co., New York—Berkshire gasolene cars, 4-cylinder chassis, 4-cylinder touring car. Also Bliss cars, 4-cylinder chassis and 4-cylinder touring car.

Archer & Co., New York City.—Hotchkiss and Deleon gasolene cars, 4-cylinder chassis.

Ardsley Motor Car Co., Yonkers, N. Y.—Ardsley gasolene cars, 4-cylinder chassis and 4-cylinder touring car.

Ariel Motor Car Co., Boston, Mass.—Ariel gasolene cars, 4-cylinder chassis, 4-cylinder touring car.

Aster Motor Co., New York City—Aster gasolene cars, 4-cylinder limousine, 2-cylinder runabout.

Austin Automobile Co., Grand Rapids, Mich.—Austin gasolene cars, 4-cylinder runabout, 4-cylinder touring car and 4-cylinder limousine.

Auto-Car Equipment Co., Buffalo, N. Y.—Hotel 'bus.

Baker Motor Vehicle Co., New York City.—Baker electric vehicles, one runabout and three closed carriages.

Bartholomew Co., Peoria, Ill.—Glide gasolene cars, 4-cylinder touring car, 2-cylinder touring car.

Bertelli & Co., New York City—Zust gasolene cars, 4-cylinder chassis.

Blomstrom Motor Co., C. H., Detroit, Mich.—Queen gasolene cars, three 4-cylinder touring cars.

Buckeye Mfg. Co., Anderson, Ind.—Lambert gasolene cars, two 4-cylinder touring cars, 2-cylinder touring car and 2-cylinder chassis.

Carey Motor Co., New York City—Carey gasolene car, 5-rotating cylinder runabout.

Chadwick Motor Car Co., New York City—Chadwick gasolene care, one 4-cylinder limousine.

Charron, Girradot & Voigt, New York City—C. G. V. gasolene cars, four 4-cylinder limousines, 4-cylinder touring cars, two 4-cylinder chassis.

Cleveland Motor Car Co., Cleveland, Ohio—Cleveland gasolene cars, 4-cylinder chassis, two 4-cylinder touring cars.

Commercial Motor Car Co., New York City—Gasolene commercial vehicles, one 4-cylinder truck.

Corbin Motor Vehicle Corporation, New Britain, Conn.—Corbin air-cooled cars, 4-cylinder chassis, two 4-cylinder touring cars.

Crawford Automobile Co., Hagerstown, Md.—Crawford gasolene cars, 2-cylinder runabout, 4-cylinder touring car.

Cryder & Co., New York City—Leon Bollee gasolene cars, 4-cylinder chassis, two 4-cylinder touring cars.

Central Park Automobile Storage Co., New York—1 Spyker 4-cylinder touring car.

Daimler Mfg. Co., Long Island City, N. Y.—American Mercedes gasolene cars, 4-cylinder chassis, 4-cylinder limousine.

Dayton Motor Car Co., Dayton, Ohio.—Stoddard Dayton gasolene cars, 4-cylinder chassis, 4-cylinder touring car, 4-cylinder limousine.

Detroit Auto Vehicle Co., Detroit, Mich.—Crown gasolene cars, 2-cylinder delivery wagon, 2-cylinder runabout.

Dolson Automobile Co., Charlotte, Mich.—Dolson gasolene cars, two 4-cylinder touring cars.

Dorris Motor Car Co., St. Louis, Mo.—Dorris gasolene cars, 4-cylinder chassis, 4-cylinder touring car.

Duryea Power Co., Reading, Pa.—Duryea gasolene cars, 3-cylinder touring car, 3-cylinder runabout.

E. H. V. Co., Middletown, Conn.—Compound gasolene cars, 3-cylinder touring car, 3-cylinder doctor's runabout, 3-cylinder light delivery wagon, 3-cylinder Victoria.

English Daimler Co., New York City—Daimler gasolene cars, 4-cylinder chassis, 4-cylinder touring car and 4-cylinder limousine.

Ford Motor Car Co., Detroit, Mich.—Ford gasolene cars, 6-cylinder chassis, 6-cylinder touring car, 2-cylinder touring car, 4-cylinder touring car and 4-cylinder runabout.

Gallaher, E. B., New York City—Brasier and Cleveland gasolene cars, 4-cylinder chassis, two 4-cylinder touring cars, 4-cylinder limousine.

Grout Bros. Automobile Co., Orange, Mass.—Grout gasolene cars, 4-cylinder runabout, 4-cylinder chassis, 4-cylinder touring car.

Iroquois Motor Car Co., Seneca Falls, N. Y. Iroquois gasolene cars, two 4-cylinder touring cars.

Iroquois Iron Works, Buffalo, N. Y.—Iroquois trucks, 4-cylinder passenger 'bus.

Jackson Automobile Co., Jackson, Mich.—Jackson gasolene cars, 4-cylinder touring car, two 2-cylinder touring cars.

Jeffery & Co., Thos. B., Kenosha, Wis.—Rambler gasolene cars, 4-cylinder chassis, two 4-cylinder touring cars, two 2-cylinder touring cars.

Johnson Service Co., New York City—Johnson steam cars, two limousines.

Knox Motor Truck Co., Springfield, Mass.—Atlas gasolene trucks, one 2-cylinder truck.

Lane Motor Vehicle Co., Poughkeepsie, N. Y.—Lane steam cars, 2-cylinder chassis, 2-cylinder touring car.

Lansden Co., Newark, N. J.—Lansden electric vehicles, one truck, one runabout.

Lear Automobile Co., Oscar, Columbus, Ohio.—Frayer Miller air-cooled cars; 4-cylinder chassis, two 4-cylinder limousines.

Logan Construction Co., Chillicothe, Ohio—Logan gasolene cars, two 2-cylinder touring cars, 2-cylinder runabout, 2-cylinder truck, 2-cylinder limousine.

Lozier Motor Co., New York City—Lozier gasolene cars, 4-cylinder chassis, 4-cylinder touring car and 4-cylinder limousine.

Marion Motor Car Co., Indianapolis, Ind.—Marion air-cooled cars, 4-cylinder chassis, 4-cylinder touring car.

Maxwell Briscoe Motor Co., Tarrytown, N. Y.—Maxwell gasolene cars, two 2-cylinder chassis, three 2-cylinder runabouts, 2-cylinder touring car, 2-cylinder delivery wagon.

Mason, Norris N., New York City—Leon Bollee gasolene cars, 4-cylinder chassis, two 4-cylinder limousines.

Mendel, Dale & Co., New York City—Upton gasolene cars, 4-cylinder touring car.

Mercedes Import Co., New York—Mercedes cars, 4-cylinder chassis.

Mitchell Motor Car Co., Racine, Wis.—Mitchell gasolene cars, 4-cylinder runabout, 4-cylinder touring car, 2-cylinder runabout, 2-cylinder truck.

Moline Automobile Co., Moline, Ill.—Moline gasolene cars, 4-cylinder touring car, 4-cylinder limousine.

Moon Motor Car Co., St. Louis, Mo.—Moon gasolene cars, 4-cylinder chassis, 4-cylinder touring car.

Mors Automobile Co., New York City—Mors gasolene cars, three 4-cylinder limousines.

McCrea Motor Truck Co., Cleveland, Ohio.—McCrea commercial gas vehicles, 2-cylinder runabout, 4-cylinder touring car, 4-cylinder limousine.

Napier Motor Car Co., of America, Boston, Mass.—Napier gasolene cars, 4-cylinder runabout, 4-cylinder touring car, 4-cylinder limousine.

National Motor Vehicle Co., Indianapolis, Ind.—National gasolene cars, 4-cylinder chassis, 6-cylinder touring car and 6-cylinder limousine and 4-cylinder touring car.

Nordyke & Marmon Co., Indianapolis, Ind.—Marmon gasolene cars, 4-cylinder chassis, two 4-cylinder touring cars.

Palais D'Lautomobile, New York City—Renault, Panhard and Delauney Belleville gasolene cars, two 4-cylinder chassis, two 4-cylinder touring cars, two 4-cylinder limousines.

Palmer & Christie, New York City—Martini gasolene cars, 4-cylinder chassis, 4-cylinder touring car and 4-cylinder limousine.

Panhard & Levassor, New York City—Panhard gasolene cars, four 4-cylinder limousines, two 4-cylinder touring cars.

Pittsburg Motor Vehicle Co., Pittsburg, Pa.—Electric commercial vehicles, electric delivery wagon.

Premier Motor Mfg. Co., Indianapolis, Ind.—Premier air cooled cars, 4-cylinder chassis, 4-cylinder touring car, 4-cylinder runabout, 4-cylinder limousine.

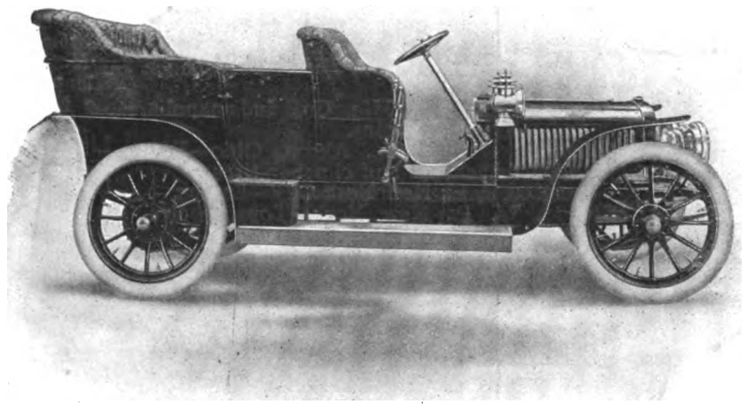
Pungs-Finch Automobile Co., Detroit, Mich.—Pungs-Finch gasolene cars; 4-cylinder chassis, 4-cylinder touring car.

Ranier Co., New York City—Ranier gasolene cars, 4-cylinder chassis, 4-cylinder runabout, 4-cylinder limousine and 4-cylinder touring car.

Rapid Motor Vehicle Co., Pontiac, Mich.—

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LOZIER 1906 MODEL, TYPE D, 40 H. P. CAR



IF THE SATISFIED customer is the best advertisement, the LOZIER MOTOR CAR enjoys a most unique position. Every customer is a satisfied customer, and the fact that each is, in addition an owner with large Automobile experience, makes his expression of satisfaction with THE LOZIER MOTOR CAR an advertisement of the VERY BEST—Ask one of them—and then see our line of Limousines, Landaulets and Touring Cars.

The Lozier Motor Car is a high-grade product with years of Motor building experience back of it—the name of "LOZIER" being a guarantee of all that is best in high-class construction.

Our new 1906 MODEL TYPE D, 40-H. P. TOURING CAR, is shown above, and it is a most beautiful car. The price is $5,500, and among its features of construction may be mentioned the long wheel-base, 117"— 36" wheels —4"-4½" tires —55" tread —10" clearance. Platform-spring suspension. Weldless I-beam nickel-steel forged axles. Dust-proof irreversible steering column. Ball-bearing steering knuckles—nickel-steel forgings. Large ball-bearing wheel hubs. Noiseless sliding gear transmission gear slides of nickel-steel—gears ground to gauge. Self-contained annular ball-bearings in thrust, transmission and differentials. Speeds—selective type—four forward and reverse —one lever for all. Dog-and-ratchet back-stop on differential shaft. Noiseless exhaust. Dust-proof internal expanding emergency hand brakes. Powerful foot brake on differential shaft. High power motor. Annealed pistons. Interchangeable valves and parts. Webbed crank-shafts. Crank-shaft bearings hardened and ground on own centers. Combination bronze and babbitt crank and crank-shaft bearing boxes. High tension magneto. Positive force-feed lubricator. Large radiator. Automatic carburetor with balanced throttle controlled by governor. Speed controls on stationary quadrant at top of steering-wheel. Automatic disengaging cam on starting crank. Self-contained, large face, cone clutch—simple adjustments. Dust-proof aluminum case under motor and entire transmission. Noiseless fiber cam-shaft driving gears. Cottered nuts throughout. Small oilers for chassis springs. Camshafts of crucible steel—cams integral. Nickel-steel clutch shaft—double universal joints. Cylinders bored and ground. Chain adjustments. DESCRIPTIVE CATALOGUE NOW READY. SEND FOR IT.



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Gasolene commercial vehicles, two 2-cylinder trucks, 2-cylinder 'bus.
Rauch & Lang Carriage Co., Cleveland, Ohio—Electric carriages, one runabout, depot carriage, and one surrey.
Reo Motor Car Co., New York City—Reo gasolene cars, 2-cylinder chassis, 2-cylinder touring car, 2-cylinder runabout, 2-cylinder coupe, 4-cylinder touring car.
Renault Freres, New York City—Renault gasolene cars, 4-cylinder chassis, two 4-cylinder limousines.
St. Louis Motor Car Co., St. Louis, Mo.—St. Louis gasolene cars, 4-cylinder chassis, 4-cylinder runabout, 4-cylinder touring car.
Viqueot Co., New York City—Viqueot gasolene cars, 4-cylinder chassis, two 4-cylinder limousines.
Wayne Automobile Co., Detroit, Mich.—Wayne gasolene cars, two 4-cylinder touring cars, 2-cylinder touring car, and 2-cylinder limousine, 2-clyinder runabout.
Welch Motor Car Co., Pontiac, Mich.—Welch gasolene cars, 4-cylinder chassis, 4-cylinder touring car, and 4-cylinder limousine.
Westinghouse Companies, The, New York City—Westinghouse-Schmidt gasolene cars, 4-cylinder chassis.
White Sewing Machine Co., Cleveland, Ohio—White steam cars, runabout, limousine, two touring cars, two extension laudaulets.
Windsor Automobile Co., Windsor, Ind.—Windsor gasolene cars, 4-cylinder chassis, 4-cylinder touring car.
York Automobile Co., York, Pa.—Pullman gasolene cars, two 4-cylinder touring cars.

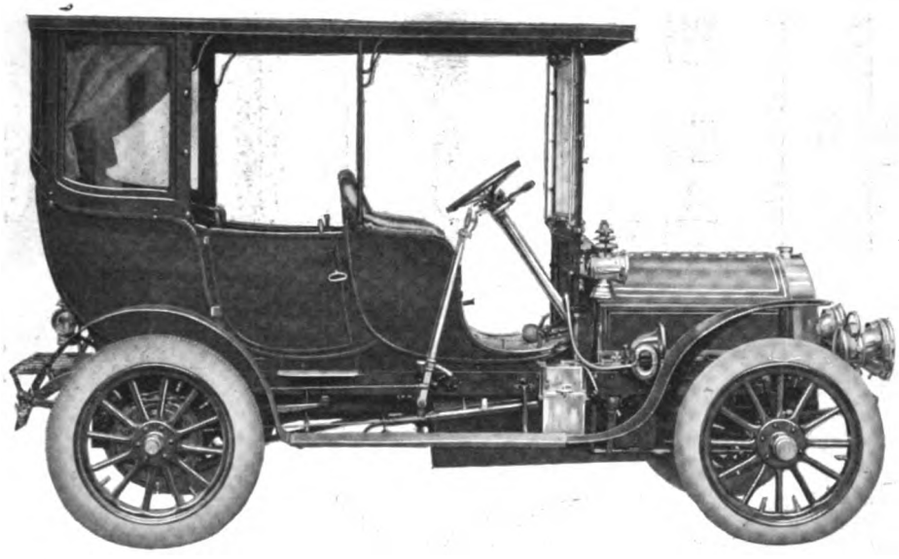
ACCESSORIES.

American Ball Bearing Co., Cleveland, O.—Ball bearing axles, wheels, etc.
American Generator Co., New York City—Gas generators.
Anderson Spark Plug Co., Boston, Mass.—Spark-plugs.
Aster Co., New York City—Parts.
Aurora Automatic Machinery Co., Aurora, Ill.—Thor motorcycles and fittings.
Auto Lock Plug Co., New York City—Lock switches.
Auto Supply Co., New York City—Supplies.
Badger Brass Mfg. Co., Kenosha, Wis.—Solar acetylene gas lamps.
Baldwin Chain and Mfg. Co., Worcester, Mass.—Baldwin detachable and riveted chains; house spring recoil check and Monitor speed recorder.
Belden Auto Transmission Co., Pittsburg, Pa.—Transmission gears.
Bowser & Co., Inc., S. F., Fort Wayne, Ind.—Gasolene storage outfits.
Boyle & Co., John, New York City—Leather hampers, license numbers, splash aprons, etc.
Briscoe Mfg. Co., Detroit, Mich.—Radiators, fenders, tanks and metal specialties.
Boehm & Levine, New York City—Supplies
Brown, F. M., New York City—Specialties.
Brown, J. C., Butler, Md.—Tire grips.
Brown, W. H., Cleveland, Ohio—Dust shields.
Brown-Lipe Gear Co., Syracuse, N. Y.—Gears.
Bullard Automatic Wrench Co., Inc., Providence, R. I.—Automatic wrenches.
Byrne, Kingston & Co., Kokomo, Ind.—Kingston carburetters and mufflers.
Carbondale Chemical Co., Carbondale, Pa.—Non-freezing compound.
Columbia Lubricants Co. of New York, New York City—Oils and greases.
Connecticut Telephone and Electric Co., Meriden, Conn.—Connecticut spark coils and ammeters.
Cook's Railway Appliance Co., Kalamazoo, Mich.—Automobile jacks.
Consolidated Rubber Tire Co., New York City—Tires.
Continental Rubber Works Co., Erie, Pa.—Tires.
Cramp & Sons, Wm., Philadelphia, Pa.—Castings, manganese bronze.
Crouse-Hinds Co., Syracuse, N. Y.—Ball bearing commutators and distributers.
Curtiss Mfg. Co., G. H., Hammondsport, N. Y.—Motorcycles.
Dac Automobile Supply House, New York City—Supplies.
Dayton Electrical Mfg. Co., Dayton, Ohio.—Apple igniters.
Detroit Motor Car Supply Co., Detroit, Mich.—Bodies and tops.
Detroit Tool Co., Detroit, Mich.—Combination tool.
Diamond Chain & Mfg. Co., Indianapolis, Ind.—Diamond chains.
Diamond Rubber Co., Akron, Ohio—Diamond detachable and clincher tires.
Dietz Co., R. E., New York City—Lamps.
Duane, W. P., New York—Tops, bodies, wind shields, etc.
Duff Mfg. Co., Pittsburg, Pa.—Barrett automobile jacks.
Duplex Ignition Co., New York City—Ignition apparatus.
Eastern Carbon Works, Jersey City, N. J.—Ignition cells and battery connectors.
Edison Storage Battery Co., Glen Ridge, N. J.—Storage batteries.
Edmunds & Jones Mfg. Co., Detroit, Mich.—E. & J. gas and oil side lamps.
Electric Rubber Mfg. Co., Rutherford, N. J.—Tires.
Electric Storage Battery Co., Philadelphia, Pa.—Exhide batteries.
Everlastic Tire Works, Chester, N. J.—Tire filler.
Firestone Tire and Rubber Co., Akron, Ohio—Firestone pneumatic and solid tires.
Fisk Rubber Co., Chicapee Falls, Mass.—Fisk mechanically fastened tires.
Gabriel Horn Mfg. Co., Cleveland Ohio—Gabriel horns and Foster shock absorber.
Gaulois Tire Co., New York City—Gaulois tires.
G & J Tire Co., Indianapolis, Ind.—G & J detachable clincher tires.
Gearless Transmission Co., Glens Falls, N. Y.—Direct drive transmission.
Gleason, Peters Air Pump Co., New York City—Pumps.
Goebel, F. A., Marietta, Ohio—Switches.
Goodrich Co., B. F., Akron, Ohio—Goodrich detachable and clincher tires.
Goodyear Tire and Rubber Co., Akron, Ohio—Goodyear detachable and clincher tires.
Gray & Davis, Amesbury, Mass.—Headlights, side and tail, oil and acetylene lamps.
Grav-Hawley Mfg. Co., Detroit, Mich.—"Autochime" horn.
Harburg Tire Co., New York City—Tires.
Hardy Co., R. E., New York City—"Starite" spark plugs.
Harris Oil Co., A. W., Providence, R. I.—Lubricants
Hartford Rubber Works Co., Hartford, Conn.—Perfected Dunlop detachable and Hartford clincher and Turner tires.
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Hendee Mfg. Co., Springfield, Mass.—Indian motorcycles and attachments.
Herz & Co., New York City—Spark-plugs, switches, timers, etc.
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Hicks Speed Indicator Co., Brooklyn, N. Y.—Speedometers.
Hjorth & Co., Wm., amestown, N. Y.—Wrenches.
Hill Mfg. Co., Buffalo, N. Y.—Tops, wind shields, bodies and seats.
Hollingshead Co., R. M., Camden, N. J.—Lubricants and soaps.
Hutchinson Electric Horn Co., New York City—Electric horns.
Hyatt Roller Bearing Co., Harrison, N. J.—Roller bearings.
International A. & V. Tire Co., New York City, N. Y.—Tires.
Iron Clad Mfg. Co., Brooklyn, N. Y.—Tanks.
Iroquois Iron Works, Buffalo, N. Y.—
Judson Co., J. G., New York City—Supplies.
Kinsey Mfg. Co., Dayton, Ohio—Radiators, hoods, fenders, tanks, pressed steel frames and dashes, mechanical oilers.
Kirkham Motor Mfg. Co., Bath, N. Y.—Motors.
Klean-Al Mfg. Co., New York City—Soaps.
Le Nonpareil Muffler Co., New York City—Mufflers.
Light Mfg. & Foundry Co., Pottstown, Pa.—Aluminum castings.
Lock Switch Mfg. Co., New York City—Switches and tire pressure indicators.
Lipman, Carl E. L., Beloit, Wis.—Lipman rotary pumps.
Lowenstein, F., New York City—Spark-plugs and Duplex igniters.
Madison Kipp Lubricator Co., Madison, Wis.—Valveless oil pumps and force feed lubricators.
Manhattan Auto School, New York City—Manhattan automobile heater.
Manufacturers Red Book Pub. Co., New York City.—
Mfgrs. Com. Co., New York City—Brokerage.
Mills Mfg. Co., New York City—Goggles.
Mayo Radiator Co., New Haven, Conn.—Radiators.
Metallic Rubber Tire Co., Jersey City, N. J Tires.
Miller, Chas. E., New York City—Accessories and supplies.
Miller's Sons, Wm. P., Brooklyn, N. Y.—Lubricants.
Mitchell Punctureless Pneumatic Tire Co., Swampscott, Mass.—Tires.
Morgan, B., Newport, R. I.—Single piece valves, hose couplings and carburetters.
Morgan & Wright, Inc., Chicago, Ill.—Morgan & Wright clincher detachable tires.
Mosler & Co., A. R., New York City—Spark-plugs, timers, etc.
Motor Car Equipment Co., New York City—Sundries.
McCord & Co., Chicago, Ill.—Force feed lubricators.
McGiehan Mfg. Co., New York City—Speedometers and odometers.
National Carbon Co., Cleveland, Ohio—Columbia dry cells.
Never-Miss Spark Plug Co., Lansing, Mich.—Spark plugs.
New York Sporting Goods Co., New York City—Supplies.
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Ofeldt & Sons, Nyack, N. Y.—Fuel regulators, water tube boilers, regulators, levelers, etc.
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Poz, William, New York—Motoring fabrics.
Prest-O-Lite Co., Indianapolis, Ind.—Prest-O-Lite gas tanks.
Prosser & Son, Thos., New York City.—
Quinby & Co., J., New York City—Bodies.
Railway Appliance Co., Chicago, Ill.—Wrenches.
Railway Appliance Co., Cook's, Kalamazoo, Mich.—Standard jacks.
Randall-Faichney Co., Boston, Mass.—Oilers.
Reading Standard Cycle Mfg. Co., Reading,

(Continued on page 968)

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This is the Great Arrow Victoria Tonneau, 40-45 H. P. with semi-enclosed top. Price without top, $5,000. Semi-enclosed top, $350 extra. Cape top, $200 extra. Folding glass front, $50 extra.

One convincing proof of the excellence of Pierce cars is the fa that they appeal most to the most mechanical minds. An automobile is a machine. The more a man understands about the principles of mechanics, the better he appreciates the way in which the Pierce Arrow is made.

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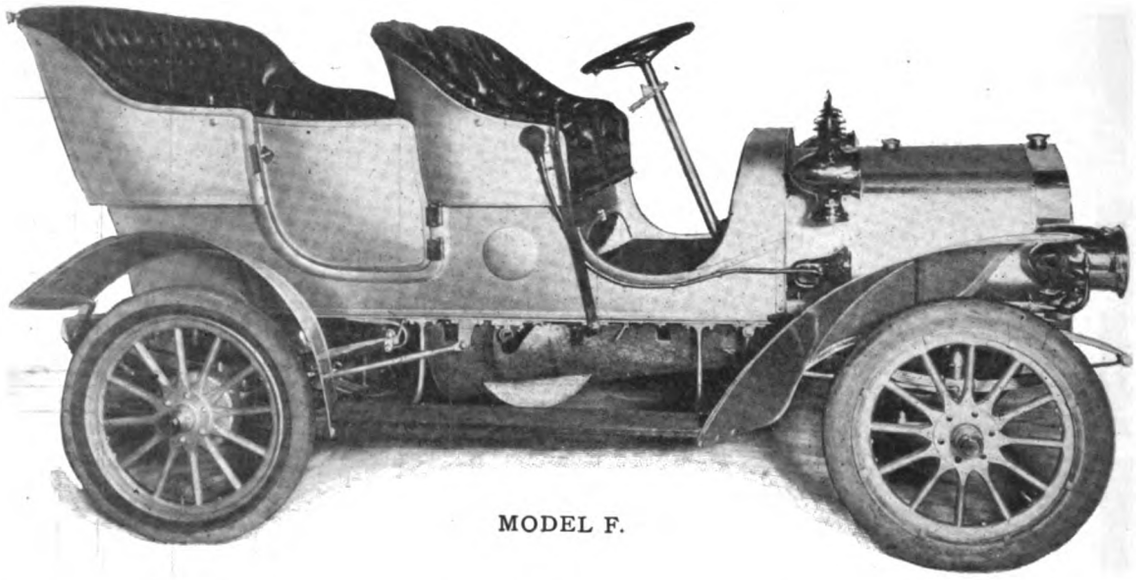
Baltimore,	Southern Auto. Co., 2021 Maryland Ave.	Philadelphia,	Foss-Hughes Motor Car Co., 201 N. Broad St.
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Chicago,	H. Paulman & Co., 1321 Michigan Ave.	Portland, Me.,	J. A. Dowling.
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Kansas City, Mo.,	E. P. Moriarty & Co., 1612 Grand Ave.	Seattle, Wash.	Broadway Auto Co.
Los Angeles,	Bush & Burge, Cor. 7th & Main Sts.	Springfield, Mass.,	E. R. Clarke Auto. Co., 117 Lyman St.
Louisville,	The Zorn-Strauss Co., Inc.	Syracuse,	Amos-Pierce Auto Co., 109 E. State St.
Milwaukee,	Hibbard Automobile Co.	St. Louis,	Western Auto. Co., 4701 Washington Blvd.
New York,	Harrolds Motor Car Co., Broadway, 58-59th Sts.	St. Paul,	C. P. Joy Auto. Co., 368 Minnesota St.
Ottawa & Montreal,	Wilson & Co., 142 Bank Street.	Toronto,	Auto & Supply Co., Ltd., 24 Temperance St.
Oakland, Cal.,	The George N. Pierce Co., 1013 Clay St. (Wholesale)	Troy, N. Y.,	Troy Auto. Exchange, 22 4th St
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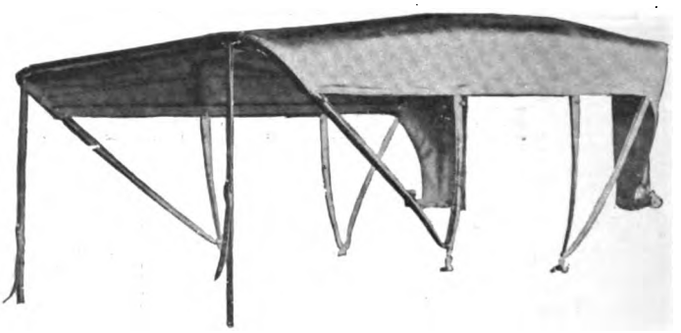
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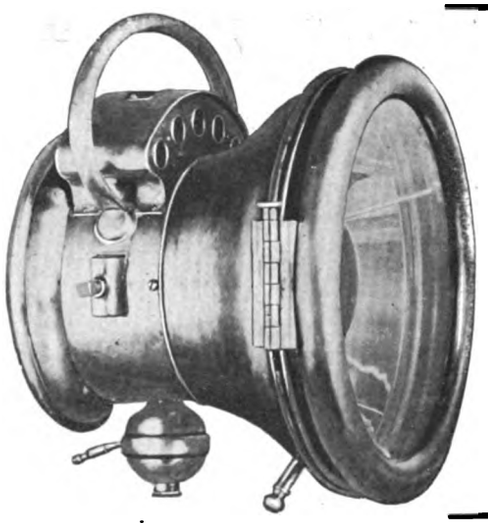
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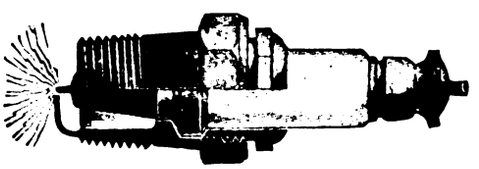
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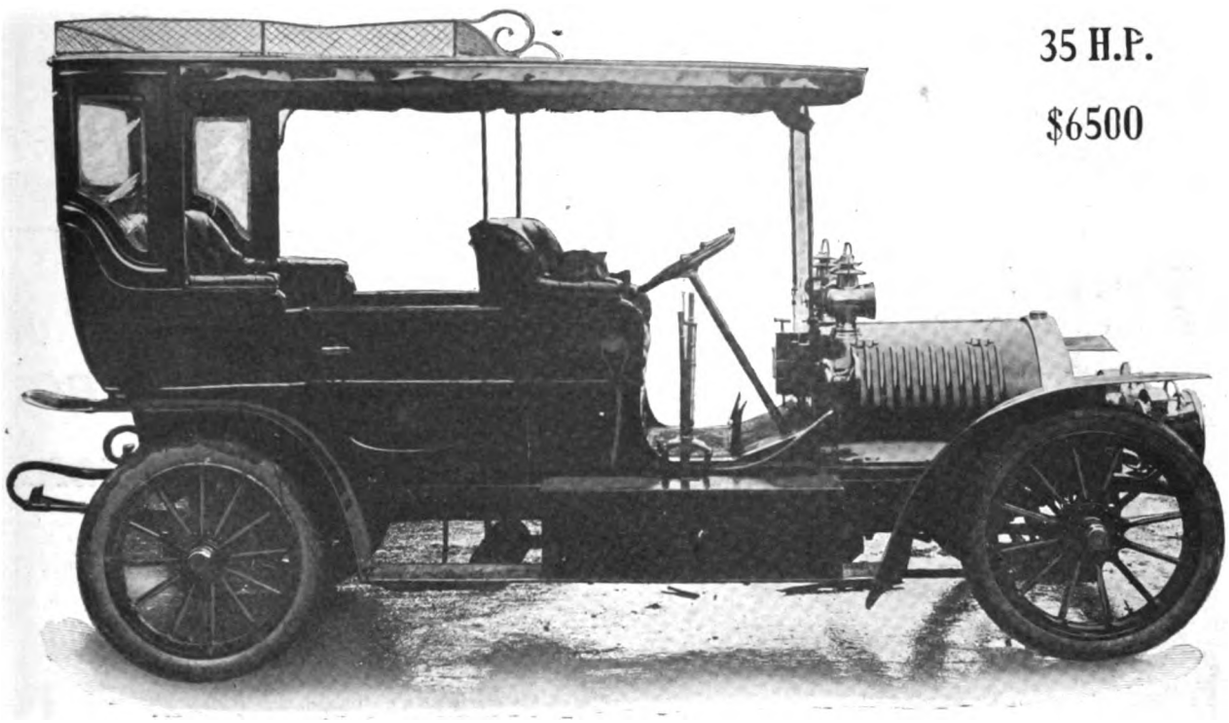
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Built by the famous gun makers of France



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A new car in a new field. A good car and worthy of inspection.

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SUMMARY OF CARS AT ARMORY.

(Continued from page 962)

Pa.—Reading Standard bicycles and Thoroughbred motorcycles.
Remy Electric Co., Anderson, Ind—Remy magnetos.
Republic Rubber Co., Youngstown, Ohio—Tires.
Republic Rubber Tire and Shoe Co., New York City—Tires and tire covers.
Richard Francois, New York City—Carburetters.
Robinson Fur Co., New York City—Fur.
Rollins Mfg. Co., Boston, Mass.—Speedometers.
Rose Mfg. Co., Philadelphia, Pa.—Neverout lamps.
Rubay, Leon, New York City—Sundries and
St. John Rubber Tire Co., New York City—Solid cushion tire.
Saks & Co., New York City—Clothing.
Safety Electric Elevator Co., New York City—Elevators for garages.
Scandanavian Fur and Leather Co., New York City.—Clothing.
Scott Muffler Co., Portsmouth, Ohio—Neck mufflers.
Sheddan Mfg. Co., Baltimore, Md.—Perfection air cushion.
Shelby Steel Tube Co., Pittsburg, Pa.—Seamless steel tubing.
Sherwin Williams Co., Cleveland, Ohio.—Paints.
Sibley & Pitman, New York City—Supplies.
Smith, R. H., Mfg. Co., Springfield, Mass.—Springfield speedometer.
Spicer Universal Joint Mfg. Co., Plainfield, N. J.—Spicer universal joints.
Splitdorf Co., C. F., New York City—Splitdorf spark-plugs, coils, commutators and ignition apparatus.
Sprague Umbrella Co., Norwalk, Conn.—Sprague canopy tops.
Springfield Metal Body Co., Springfield, Mass.—Tops and aluminum bodies.
Standard Roller Bearing Co., Philadelphia, Pa.—Steel balls, bearings, axles, etc.
Standard Welding Co., Cleveland, Ohio.—Rims, tubing and parts.
Steel Ball Co., Chicago, Ill.—Hill precision oilers.
Stevens & Co., New York—Esco speedometer, index funnels.
Survey Map Co., New York City—Maps.
Teel & Co., E., Medford, Mass.—Wind shields, tools, etc.
Timken Roller Bearing Axle Co., Canton, Ohio—Roller bearings, axles, etc.
Thermo-electric Co., New York City—Ignition apparatus.
Tingley, Chas. O., Rahway, N. J.—Vulcanizing outfits.
20th Century Mfg. Co., New York City—Lamps and generators.
Uncas Specialty Co., Norwich Conn.—Leavitt secondary distributers and timers.
Veeder Mfg. Co., Hartford, Conn.—Odometers, tachometers, etc.
Veedeer Vibrator Co., New York City.—Vibrators.
Wagner Motor Cycle Co., St. Paul, Minn.—Wagner motorcycles.
Warner Gear Co., Muncie, Ind.—Warner gears.
Wray Pump and Register Co., Rochester, N. Y.—Pumps and pressure registers.
Warner Instrument Co., Beloit, Wis.—Speedometers.
Wayne Automobile Co., Detroit, Mich.—Wayne cars.
Webb Co., New York City—Speed indicators.
Welch Motor Car Co., Pontiac, Mich.—Welch cars.

The Autocar

TYPE XII
$2,600



Guidance and speed-regulation are simultaneous. Spark and throttle are controlled by grips in rim of steering wheel.

Write for the Autocar Book, descriptive of the **standardized** Autocar Runabout (Type X) and of Touring-car Type XII.

Motor.—24 James Watt horse power; (26 H. P. on test). Four vertical water-cooled cylinders. Cylinders cast separately. Bore 4 inches, stroke 4½ inches. Cylinders and pistons ground to size. Crank shaft oil tempered. All bearings ground to size. Inlet and exhaust valves mechanically operated; fully adjustable.
Rear Drive.—Two drop-forged hardened steel bevel gears, with bevel gear differential. Roller bearings throughout.
Tires.—Fisk "Heavy Car" type tires—32 inch by 4 inch.
Transmission.—Sliding gear type. Drop forged hardened steel gears of ample strength, their shafts carried on large Hyatt roller bearings. Splash lubrication. Three forward speeds and reverse.
Tread and Wheel Base.—56-inch tread. 100-inch wheel base.
Vaporizer.—Holley vaporizer, Autocar type, at side of crank case.
Wheels.—Twelve spoke Midgley steel artillery wheels.
Axles.—Front axle, seamless tubing. Rear live axle of steel, ground bearings, with squared ends at the wheels, obviating the use of keys at that point. Seamless tubing, dust-proof case.
Brakes.—Internal and external hub brakes. A foot lever controls the external; side hand lever the internal brakes, the hand lever first throwing out the clutch.
Control.—Right-hand wheel steer with bevel gear and sector. Spark and throttle control grips in the rim of the wheel. A foot-operated clutch (left foot).
Cooling System.—Coil fin radiator with fan and centrifugal (gear driven) circulating water pump.
Frame.—Wood, continuous pressed steel channel reinforcement.
Ignition.—Large three-cell storage battery, four-point coil, gear driven spark timer on left side of crank case. Jump spark plugs.
Lubrication.—Crank shaft bearings are oiled directly. Cam shaft bearings oiled by continuous force feed of oil from mechanical (gear driven) oiler, as well as by splash. Force-feed oiler is positive throughout. There is no dependence on gravity.

THE AUTOCAR CO.,
ARDMORE, PA.
Member; Association of Licensed Automobile Manufacturers.

Reliability

KNOWLEDGE IS POWER
in every walk of life.
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is to keep posted and the best way to keep posted is to regularly read
THE MOTOR WORLD
Nothing of moment in the Automobile world escapes it.
It is an uncommonly valuable $2 worth.



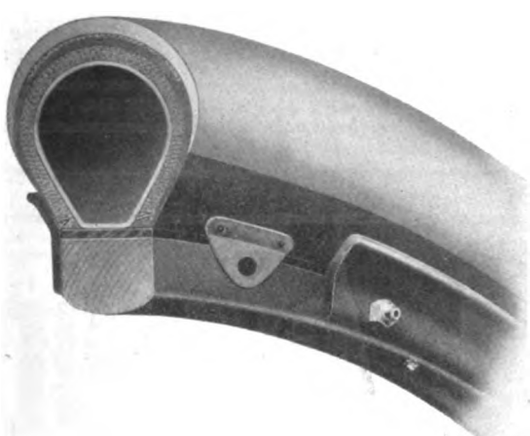


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"Firestone"

Pneumatic Tires



are designed to do away with all the objectionable features which have existed to so great an extent in pneumatic tires heretofore made.

We well knew of the existence of these objections and laid our plans for the making of a pneumatic tire which should contain none of them.

Our success has been demonstrated and proven in the severest of continued road tests and it is with the utmost confidence in their thorough worth that we recommend FIRESTONE TIRES and stand back of them.

The body of the FIRESTONE TIRE is unusually sturdy in its make-up. The fabric used is the best Sea Island Cotton, carefully selected for purity and strength. The rubber is the choicest Up-River Para so scientifically compounded as to give it the greatest possible wear-resisting quality.

The tire is attached so securely that it cannot possibly come off, inflated or deflated, no matter how severe the service.

The union of the tire and flange is extremely close to prevent moisture from penetrating to the inner surface to the detriment of tubeor casing.

The removal and replacement of a FIRESTONE PNEUMATIC TIRE is accomplished with the utmost ease and in the shortest possible time.

Any novice can with an ordinary wrench secure access to his inner tube or remove the tire complete in less than 2 minutes. The tube may be replaced and the tire refastened in the same time.

There is no prying or pulling on the tire, and consequently no possibility of causing injury, such as frequently occurs from the use of old-fashioned tire tools.

Remember, we particularly recommend FIRESTONE TIRES to any one who appreciates the best the market affords. We know they are supremely good and will give better and more lasting service than any tire you ever used.

FIRESTONE SIDE WIRE SOLID TIRES for commercial vehicles have been on the market for years and have proven the excellence of our methods of construction.

To-day more than 80% of all such tires in use in this country are FIRESTONE TIRES.

We invite correspondence and will be pleased to furnish full information and advertising literature upon request.

Then Why Not "Firestone?"

THE FIRESTONE TIRE & RUBBER CO., - Akron, Ohio.

BRANCHES:—New York Chicago Boston Detroit Philadelphia St. Louis

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The Model F
30-35
Horse Power

Cleveland

THE CAR WITHOUT A WEAK SPOT



SHOWING THE CLEVELAND MODEL F, EQUIPPED WITH THE TULIP BODY. PRICE, $3500.

SPECIFICATIONS.

4-cylinder 30-35 H. P.
Imported Simms-Bosch Magneto—automatic make and break spark.
Direct drive. Nickel steel I-beam front axle.
34x4-inch wheels. Ball bearings. Wheel base, 104 inches.
Simplest control, 5 to 55 miles on high gear.
Absolutely noiseless.
Body option Victoria or Tulip, as illustrated.

All the little improvements—all the claims for speed—are nothing to the surety that **YOU WON'T BREAK DOWN.**

In Cleveland construction every part is designed and put in to stay. The parts that don't require strength will stand the strain they **MAY** get. The parts that must stand the strain, are made of nickel steel forgings of the highest known tensile strength and toughness. The brains and experience of the Garford Company—the largest manufacturers of exclusively high grade automobile parts and chassis in this country—who make the entire chassis, and all the experiences of the maker are concentrated in the Cleveland. It is designed and made so well that **REPAIRS** will not figure in its cost of maintenance. The average cost of repairs of the 1905 car averaged less than $4.00, including time.

IT IS THE CAR WITHOUT A WEAK SPOT. We guarantee you against them—and it is a year ahead of other American automobile construction.

The Cleveland ignition follows the best foreign practice and the Simms-Bosch low tension magneto with automatic make and break spark is used—doing away with jump spark troubles—short circuiting—batteries—curls and commutators. The spark is automatically controlled by the speed of the engine and is out of the operator's hands.

This Simms-Bosch magneto ignition was used on the first seven cars in the last Gordon-Bennett cup race.

The carburetor is an advanced and perfected type of our own construction. It is automatic—requires no adjustment—and will not flood.

The muffler lays the dust and keeps it out of the car.



SHOWING THE CLEVELAND MODEL F, EQUIPPED WITH THE VICTORIA BODY. PRICE $3500.

Price, $3,500.00 to $5,000.00, depending upon Body Equipment. The 20-H. P. Model D will be continued without change. Price, $2,800.00. Both models guaranteed for one year. Catalogue and full information on request.

CLEVELAND MOTOR CAR CO., Dept. II, Cleveland, Ohio.

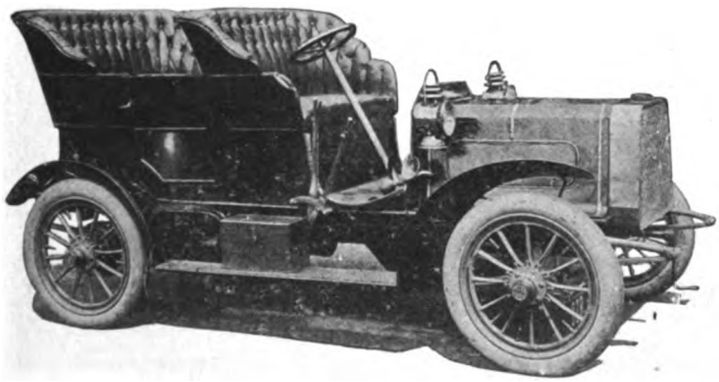
Gen. Eastern Distributing Agent, E. B. Gallaher, 228-230 West 58th Street, N. Y.; Boston agent, Butler Motor Car Co., 998 Boylston Street, Boston; So. California agent, A. P. Worthington, Los Angeles, Cal. Cleveland Auto & Cycle Co., Buffalo, N. Y.
Owing to the unusual interest in the Cleveland car agents in unassigned territory are advised to enter into early negotiations.
NEW YORK AUTOMOBILE SHOW, SIXTY-NINTH REGIMENT ARMORY, SPACE E-2.

THE

GROUT 4 CYLINDER

30-35 H. P.

PRICE, $2,500



Read the following specifications and then think it over:

30-35 H. P., 4 cylinder, balanced motor, high tension ignition, using one coil with distributing commutator.
Forced ventilation by fan.
Mechanically operated valves.
Inlet valves interchangeable with exhaust valves.
Control on steering wheel to gas and ignition, no motion transmitted to these levers by movement of steering wheel.
Gear, three speeds and reverse, actuated by single lever.
Wheels, 32-inch, wood artillery, ball bearings, 4-inch tires.
Armored frame.
Steering by irreversible worm and sector, dust proof and oil tight.
Lubrication: Mechanically operated oiler, a definite amount of oil to all cylinders, crank bearings, connecting rod bearings, etc.
Lubricating system has received great attention and is particularly thorough. It is non-adjustable, that is, set at the factory and needs only to be supplied with oil.
Top and headlight, with generator.

GROUT BROS. AUTOMOBILE CO., Orange, Mass.

NEW YORK AGENCY: MUNSING & CHAPMAN, 1855 BROADWAY

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America's Most Famous Car.

THE ROYAL TOURIST

All parts produced in the greatly enlarged factory of

THE ROYAL MOTOR CAR COMPANY

Cleveland, Ohio.

ROYAL

40 H. P.—four cylinder—5 inch bore by 5½ inch stroke—bronze bearings throughout engine — commutator easy of access on top of engine—conical leather faced clutch of large diameter—flat springs placed under leather makes starting of car progressive—no adjustment ever necessary—sliding gear transmission—high grade bearings throughout—direct drive on high gear—all gears bolted to g flanges, so that no dependence is placed on keys or set screws that hold gears in place. Universal joints and propeller shaft exceptionally robust, and all wearing parts of same are hardened. Entire rear axle equipped with roller bearings; front wheels also run on roller bearings; steering gear is of worm and segment type, and is very easy in its action; pressed steel frame with drop forged spring hangers; positive feed oiler; fan draws air through entire radiating surface, of cellular type radiator; wheel base, 110 inches; gasoline capacity, 22 gallons.

The entire car is built from the best materials that money can buy. It is designed by America's leading motor car engineer. Produced by competent mechanics, on precision machinery.

This is the reason why the car was able to beat the special built racing machines in the Vanderbilt Elimination Trials, after turning a somersault that would have put any other car in the world out of the race. This is also the reason why all of the owners of Royal Tourists are so well satisfied and have such good service from their cars. From all of the data that we have been able to secure, the cost for repairs in running a Royal Tourist averages less than $25.00 each for an entire season. If you want to know how good a Royal Tourist is, ask some of your friends who are fortunate enough to own one.

MODEL G, $3,500, FORTY H. P.

New 1906 Catalogue now ready. Write for it.

THE ROYAL MOTOR CAR COMPANY,

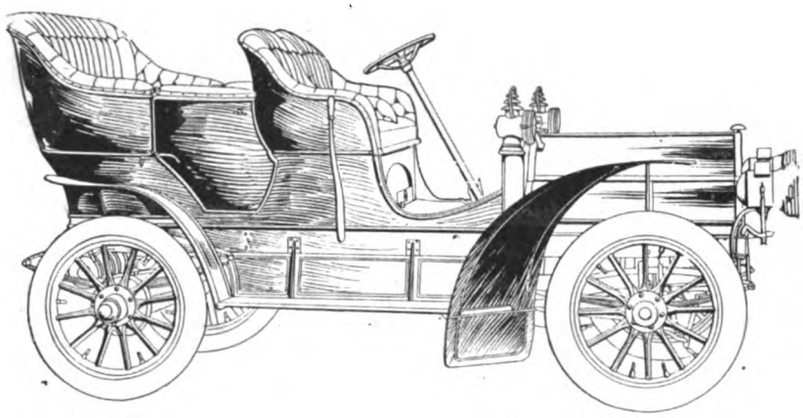
CLEVELAND, OHIO.

Members Association of Licensed Automobile Manufacturers.

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THE MARMON

"A MECHANICAL MASTERPIECE"



THE ONLY CAR WITH DOUBLE THREE POINT SUSPENSION.

DOUBLE THREE POINT SUSPENSION must not be confused with fixed THREE POINT SUSPENSION; it is the ONLY CAR which has a PIVOTAL THREE POINT SUSPENSION for both frames.

Solid cast aluminum body on one frame, power plant on another, each suspended on THREE PIVOTAL POINTS.

This eliminates the binding and twisting strains inevitable in rigid suspension of all other cars.

Also permits the use of a rigid shaft drive without the use of cardan joints.

Every part is manufactured under one roof excepting tires and lamps.

The easiest riding car in America, without any exception.

Automatic force lubrication in engine, with constant and uniform flow through a hollow crank shaft directly into engine bearings, crank and piston pin bearings. Allows a distance of 500 to 1000 miles on less than on gallon of oil for the engine.

Model C, 24 H. P., $2,500. **Model D, 32 H. P., $3,000.**

ALSO chassis and solid cast aluminum body parts. All patented features will be thoroughly explained and demonstrated at any time during the show by

Greater New York Agent, THEO. E. SCHULZ,
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TELEPHONE, 2686-7 RIVERSIDE.

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15 cents per line of seven words, cash with order. In capitals, 25 cents per line.

A TEN PASSENGER wagonette; sample car, 1905-1906 model steam; price and description on application. THOMPSON AUTO CO., Olneyville Sq., Providence, R. I.

WANTED—Trained men as instructors in progressive automobile school. Fitness proved by examination. Address, INSTRUCTOR, care of Motor World, Box 649, N. Y.

FOR SALE—Established Automobile business, stock and machinery. For particulars address STANDARD WHEEL CO., Terre Haute, Indiana.

FOR SALE—Very cheap, Searchmont four cylinder; Ford two cylinder; Winton two cylinder; Rambler two cylinder; improved Rambler E, one cylinder; Orient Buckboard; mostly 1905 cars; prices and descriptions extremely interesting. A card will bring the information. E. S. YOUSE, Reading, Pa.

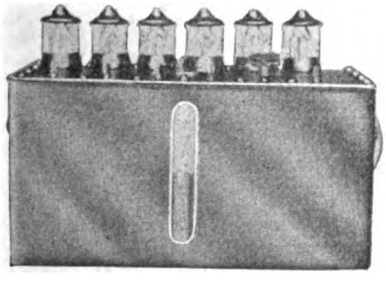
MUST be sold at once for the account of purchasers of 1905 Royal Tourists: 1904 Peerless, fine condition, canopy top, gas tank, price $1,500; 1905 Royal Tourist, fine order; 1905 Pope-Toledo, type 8, perfect condition, canopy top. Ohio Sales Agency, THE ROYAL MOTOR CAR CO., 330 Euclid Ave., Cleveland. O.

FOR SALE—One Model D. Cadillac Automobile in first class condition full lamp equipment and cape top. Also one Model F. Cadillac, in first class condition. THE COOK & STODDARD CO., 22nd and P St., N, W. Washington, D. C.

WANTED
SUB-AGENTS JACKSON TOURING CARS, 20-24-40 H.P.

The East Liberty Automobile Co., Pittsburg, Pa., wants agents in every County in Pennsylvania, West of Tioga County. Also State of West Virginia. Good proposition. Write for territory.

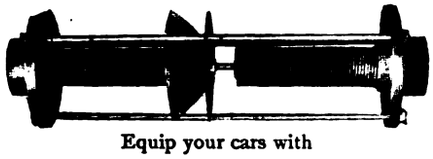
FORCE FEED LUBRICATION.



Constant Sight Feed. No Liquids.

McCORD & CO., 1407-80 Old Colony Bldg., CHICAGO

E. J. DAY & CO., Pacific Coast Distributors, 324-326 Golden Gate Ave., San Francisco, Cal.



Equip your cars with

Champion Mufflers

and make them as quiet as an Electric. They produce no back pressure and are practically noiseless and self cleaning. The best on the market for Air Cooled Motors. Write for prices.

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We Deliver the Goods.

Our entire organization has from the very first been devoted exclusively to the building of Commercial Vehicles.

The success of "Rapid" motor wagons is due to the fact that they are built with the idea of giving heavy continuous service, and carrying heavy loads.

The wagon illustrated weighs 2230 lbs. and carries 3000 lbs. easily. Rear Wheel measures 34 inches; front wheel 32 inches; solid tires. The double side chain drive insures a maximum of power delivered to the 2-inch solid steel axles. The cut illustrates only one of our many bodies. Size and style of body furnished to meet your requirements.

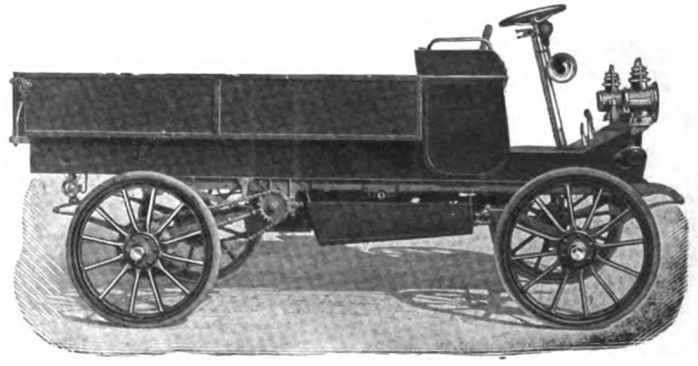
One Ton, $1,400; 1 1-2 Ton, $1,800.

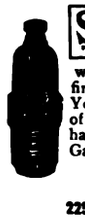
GUARANTEED FOR ONE YEAR.

Agents can secure territory by writing me now, before all choice allotments are gone. Our new factory is a guarantee of prompt delivery.

Address F. R. HENRY, Sales Manager,

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SURETY

Messrs. Clemens & Merz were *sure* of the four No. 4 "Sta-Rite" Plugs which fired 850,000 charges in 24 hours—distance 1094 miles. You can always be just as sure of any of the 47 sizes of Improved "Sta-Rites" (six types). Insist upon having "Sta-Rites" in your *new* car and save bother. Garden show space No. 78. Armory show space No. 61 Coliseum show space No. 178

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ARE YOU FROM MISSOURI?

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"INVADER" OIL

The Oil That Graphitizes.

For Air and Water Cooled Cylinders.

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(1) Every *STANDARD RIM* is inspected and marked with the tire inspectors stamp, guaranteeing tires fitted to these winds.

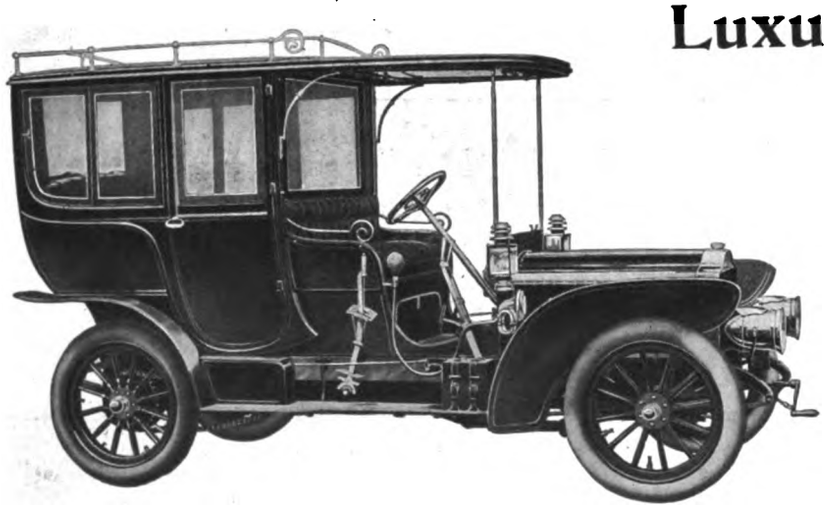
(2) *STANDARD RIMS* are enduring. In the process of inspection every rim not absolutely perfect is thrown out.

(3) *STANDARD RIMS* have a record of successful service that inspires confidence.

"IT'S RIGHT IF IT'S A STANDARD RIM"

STANDARD WELDING COMPANY,
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Luxuriously Finished

Limousines

a Specialty

NEW HAVEN CARRIAGE CO.

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Patent, Sill and Name Plates of every description

THE CHANDLER CO.
NAME PLATES AND STAMPINGS
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Light Stampings in Brass or Steel.

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NORTHERN
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The quietest and easiest running car in the world. Its perfectly balanced motor, full elliptic springs and extra large tires (30x4) combined with its **encased mechanism** and **three-point motor support** make it the ideal car for American roads. Extra long wheel base (106 inches) guarantees comfortable easy riding. Our 1906 line includes:

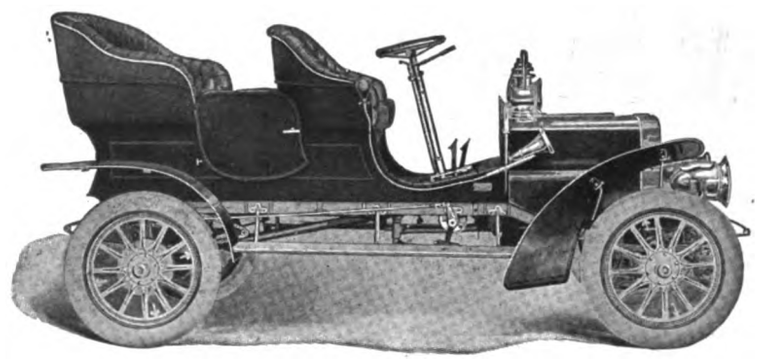
Sturdy Northern Runabout, 7 h. p,, with oil lamp equipment, ... **$650**

Silent Northern Touring Car, 20 h. p., double opposed motor, with gas and oil lamp equipment, ... **1800**

Silent Northern Limousine, 20 h. p., with gas and oil equipment, ... **2800**

Model K, 30 h. p , four-cylinder car, **air controlled,** and **air brakes,** with gas and oil lamp equipment, ... **3000**

Write for Catalogue.



SILENT NORTHERN TOURING CAR.
20 h p. Double opposed motor. Double side entrance, 5 passengers. Tires 30x4. $1,800. Fully equipped, f. o b., Detroit.

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Member Association of Licensed Automobile Manufacturers.

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To enter the

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means something to you in the way of Tire-knowledge.

It may also mean something to be able to exchange old tires for new and receive an allowance of 20 per cent. if you buy Pennsylvania Clinchers.

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JEANNETTE, PA.

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THE
NATIONAL SHOW
February 3=10, 1906

WILL BE HELD AT

CHICAGO

Completely filling 100,000 square feet of space afforded by the

Coliseum and First Regiment Armory

Ninety-seven Exhibitors of Automobiles
One Hundred and Thirty Exhibitors of Accessories

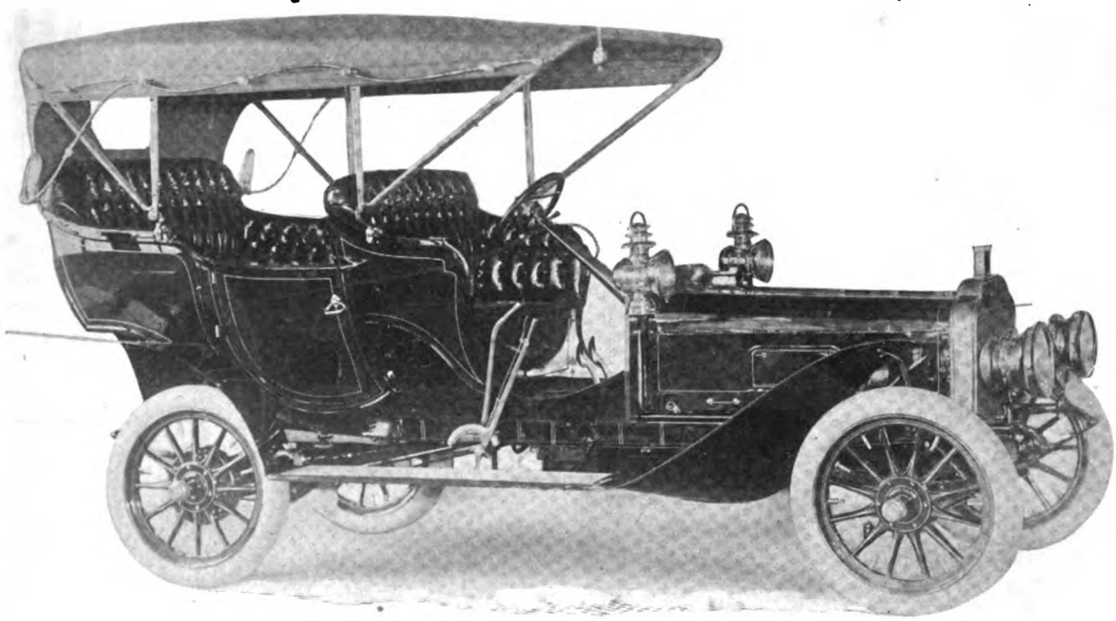
An Open Show. A Complete Show.

One admission fee to both buildings, which will be connected by a covered and completely enclosed passage way. Usual courtesies to dealers, at morning sessions, application for which must be made at the office in First Regiment Armory. Further details of

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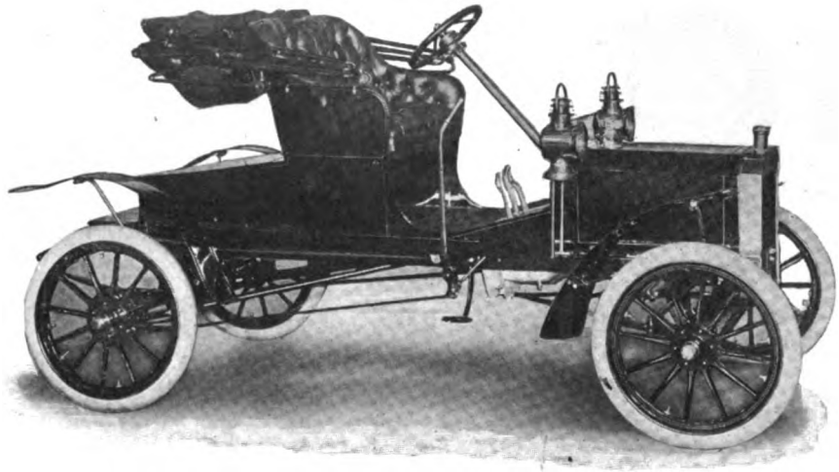
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1906 MODELS FORD MOTOR CARS



6 CYLINDER TOURING CAR, PRICE $2500

40 h. p., 114-inch wheel base. No foreign or American Car at any price can surpass this superb machine for control, comfort, power and general serviceability. Do not buy a touring car until you have examined every detail of this car and had a thorough demonstration of its wonderful possibilities.



4 CYLINDER RUNABOUT, PRICE $500

15 h. p., 84-inch wheel base. This car is built in greater quantities than the combined Runabout output of all American factories.

Early in the history of the Automobile industry Henry Ford took the position that there should be no restriction in the price of the automobile. The automobile was of such stupendous possibilities, and so necessary, that nothing should hinder its development, restrict its output, or hold up a fictious value, and the Ford Company has elected to make its own price on its product, and would not become a member of a price restricting association.

So in making the price on the Ford output, the question was not "how much can we get for this car?" but "how low can we sell it and make a small margin on each one, how many cars must be turned out to get the lowest cost per car, and will the demand absorb this tremendous output?"

These have been mighty questions.

To build the number necessary to sell a six-cylinder car of this class for $2500 and a four-cylinder high-grade Runabout for $500 was a proposition that staggered every man in the automobile industry, and was doubted and even ridiculed. BUT IT HAS BEEN DONE.

SEE THESE CARS AT THE BIG CHICAGO SHOW.

FORD MOTOR COMPANY, Detroit, Mich.

Member American Motor Car Manufacturers' Association, Chicago.

BRANCHES—147-149-151-153 Columbus Ave., Boston; 1721-1723 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; 1916 S. E. Euclid St., Cleveland; 308-310 E. 11th St., Kansas City.

Canadian Trade Supplied by the FORD MOTOR COMPANY OF CANADA, Ltd., Walkerville, Ont.

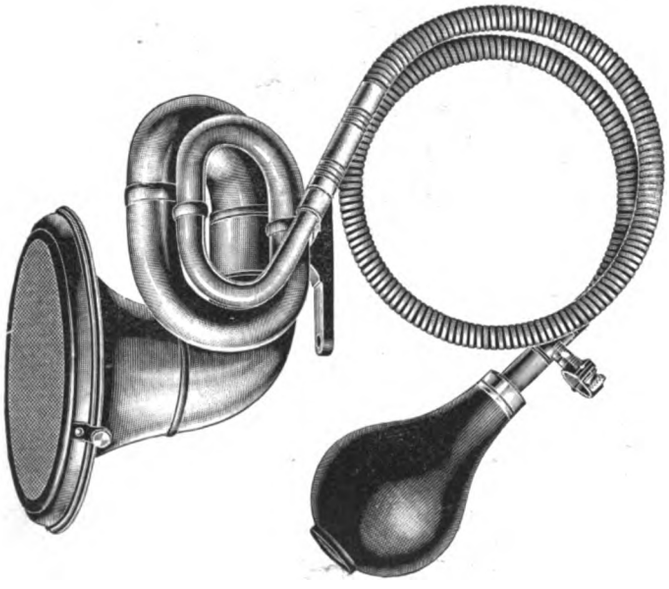
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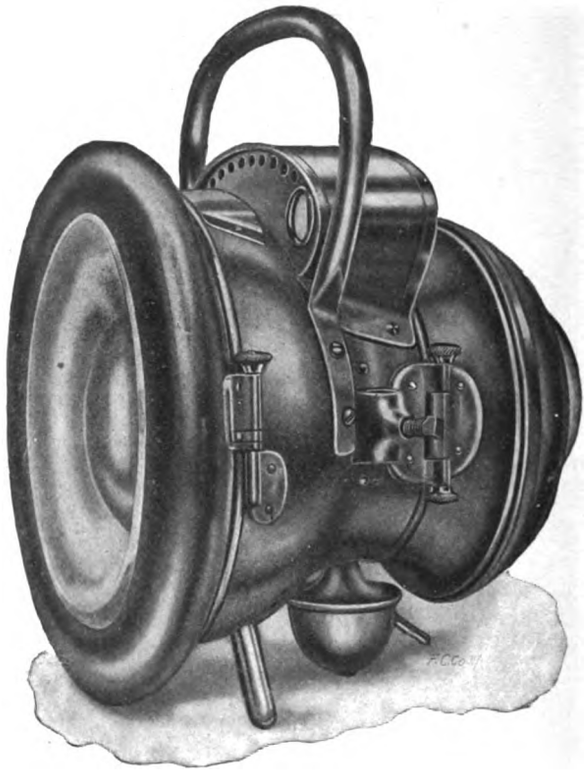
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Giving Prices. Sizes, Types, and All Details.





SPACE 122, MADISON SQUARE GARDEN.

We have the best line of Lamps, Generators and Horns—quality high, prices low. Better see us at our Space during Show Week, so that we can prove our claims.

A. H. FUNKE,

83 Chambers Street, - - New York.

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Garford Parts

We are not exhibiting at the automobile shows. All our customers, however, are displaying cars in which a few, many, or all of the Garford products can be seen. Our absence, therefore, will hardly be noticed.

Months ago the product of our factories was sold—sold exclusively to makers of high grade cars. We cannot accept further orders just now. But a more extensive factory equipment will enable us to increase our capacity for 1906-07.

MOTOR WAGON PARTS

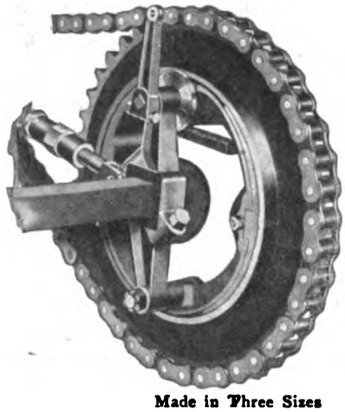
We can promptly execute orders for steering gears, brakes, sprockets, motor hangers and other parts for motor wagons.



Also Pinion and Sector Type

They are suitable for all classes of commercial power vehicles, from the lightest to the heaviest.

They are not "freak" components of a wonder working vehicle.



Made in Three Sizes

They enjoy the rare distinction of having been thoroughly tested for some years past in the most varied and severe kind of commercial service.

Circulars 2, 3, 5, 10 and 11 give information concerning them.

THE GARFORD CO.

ELYRIA, O.

Sales Manager: Hayden Eames, Cleveland, O.

New JONES Combination

SPEEDOMETER - ODOMETER

For the dashboard of your automobile. Indicates the speed with positive accuracy. Registers the Season mileage traveled in miles and tenths to 10,000 miles. Registers the Trip mileage in miles and tenths to 100 miles. The mile figures are black; fractional miles, red. The Trip register has a stop-watch instantaneous resetting stem. Speed is indicated and mileage cumulatively recorded whether the car go forward or backward.

THE DASH BRACKET is adjustable to permit the instrument being set at any desirable angle.

THE SHAFT CONNECTION is adjustable and permits the passing of the shaft through the floor and through or around either end of the car.

The principle and general construction of our new instruments remain essentially the same as in previous models—for the reason that the feature of compactness and durability are made possible in their highest form.

Complete catalog upon request.

New York exhibit Madison Square Garden only—January 13-20.

JONES SPEEDOMETER,

132 West 32d Street, New York.



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G&J TIRES

for the

Season of 1906.

One Cure Wrapped Tires.
Vulcanized in Open Steam.
Strong and Tough.
Most Durable.
Highly Resilient.

The best tire made for automobile use.

Write us.

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Los Angeles, Ramsay-Hutchins Rubber Co.

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It was real merit that made the "Soot-Proof" Spark Plugs win the McMurtry Medal in the Six Day National Economy Contest. Ninety per cent. of all contests won in America were won by cars using "Soot-Proof" Plugs. Specify them when ordering cars. It will save you trouble. Imitations? Sure, but that's flattery.

INDESTRUCTIBLE, $2.00.
REGULAR, $1.50, GUARANTEED.

Your jobber has them.

C. A. MEZGER, Inc.,
203 W. 80th Street New York.

NATIONAL SALES CORPORATION, Factory Sales Managers. 256 Broadway, New York.

Pennsylvania
Clincher Tires

should be specified on your new car if you want to enter the

$1,000 Tire Economy Competition

You would pay a good premium for an insurance policy against break-downs.

Then buy the best tires that can be made and you will carry your own insurance.

Pennsylvania Rubber Co.

JEANNETTE, PA.

NEW YORK: 1605 Broadway, CHICAGO: 166 Lake Street
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The universal praise given **The Goodrich Quick Detachable Tire and Rim** is today the most noteworthy fact in connection with the automobile tire industry.

No other quick detachable construction is so simple in its workings or admits of such quick and easy handling of the tire in detaching and attaching.

No lugs, no clips, no pinching of the inner tube, no possibility of the tire working loose, no bolts, screws or turnbuckles of any sort.

Please write for special booklet.

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BUFFALO, 731 Main St. — CHICAGO, 141 Lake St.
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BOSTON, 161 Columbus Ave. — DENVER, 1444 Curtis St.
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TRADE MARK

THE 1906

DUQUESNE

Four-Cylinder Runabout is a Winner

Light
Strong
Roomy
Powerful

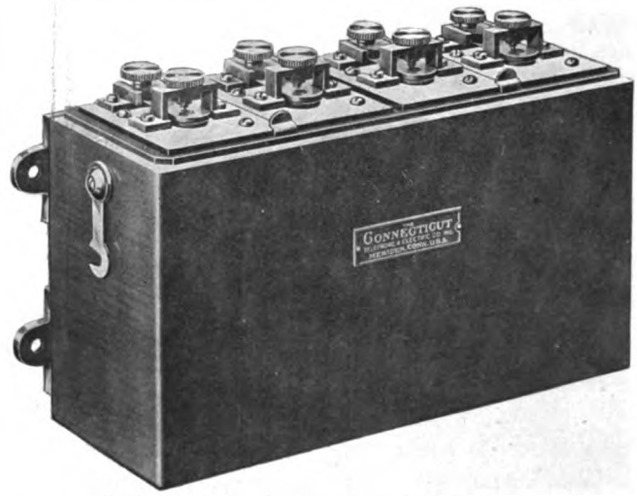
90 inch wheel base. Four-Cylinder. Four-Cycle. Air-Cooled.
Made of the best material obtainable, and strictly high grade in every particular.
Starts from the seat by a foot lever, no cranking.
Full control on steering column, no side levers.
Speed, 40 miles per hour.
Price, complete with cape top, $2,000.00.

Duquesne Construction Co.
JAMESTOWN, N. Y.

CONNECTICUT

SPARK COILS

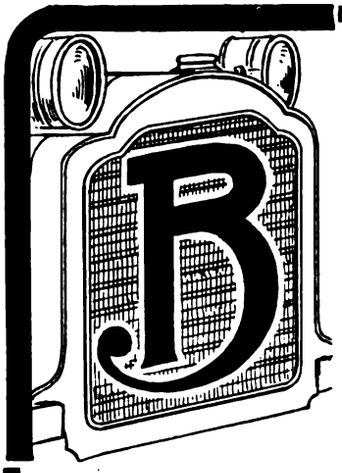
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World's Records for Endurance and Efficiency



Write for Catalog No. 12 W, which gives the proof.

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ALWAYS IN FRONT

We are in the midst of our most prosperous season and are proud of the popularity of our product as evidenced by its general adoption.

Briscoe construction has won out through its merits, both of design and construction. Both of our plants are busy with orders from the most representative car builders. We have shown our ability to provide the best results for those wishing either tubular or honeycomb radiators. We have also enlarged our line of products to embrace all the sheet metal parts required on both water and air cooled automobiles.

Our exhibits at all the shows will be well worth visiting by automobile manufacturers and assemblers. We will have on exhibition the latest designs in which we have made up our several styles of trustworthy radiators as well as of samples of new methods of water circulation developed by us in our experimental department. We may be found at the Garden in Section 72, Elevated Platform, at the Armory in Section 15 Gallery, at the Coliseum in Section 134 and at the Detroit Armory in Section 27 Gallery.

Our two plants bring BRISCOE PARTS within reach of all automobile builders and our workmanship remains—*the very best.*



WE ARE MAKERS OF

Both Honeycomb and Tubular RADIATORS.

Iron and Aluminum HOODS AND FENDERS.

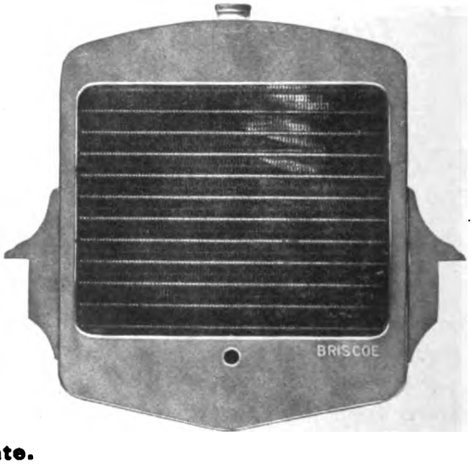
Sheet metal DECK BOXES, SEATS AND MUFFLERS.

Ornamental HOOD FRONTS for air cooled cars.

Galvanized iron and copper Gasoline and Water TANKS.

Plain and ball bearing DISC FANS.

Concave Sheet Metal DASHES.



Write to our nearest office for estimate.

BRISCOE MFG CO.

DETROIT, MICH. NEWARK, N. J.

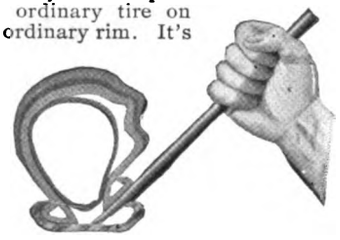
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Why Goodyear Auto Tires Won't Creep

DID you ever try to force an inch tube over an inch and a quarter bar—or to put a pair of No. 7 gloves on a No. 8 hand?

You wouldn't be so foolish, would you?

But that's to all intents and purposes what the Automobile Man has to do every time he puts an ordinary tire on an ordinary rim. It's

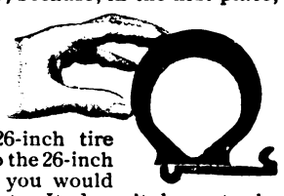


about as hard work as breaking into a bank, and he goes at it the same way, with a "jimmy" and other burglar's tools. Because a 26-inch wheel (for example) is really *27 inches* in diameter, when you consider the flange. So a 26-inch tire has to be forced over a 27-inch rim every time you put on a tire, or take it off.

It's a heart breaking job, even for a strong man, and it takes from half an hour to an hour each time you do it.

And after you have removed such a tire a few times, the base of the tire becomes stretched, and the fabric (used to strengthen it) becomes broken in places, until this tie becomes 27 inches in diameter instead of 26, a full inch larger that the face of your wheel. So you have to bolt it down, or it will creep, tear the valve out and cause all kinds of trouble. And even then you have to keep it pumped up continually as hard as it will stand.

Now the Goodyear Detachable Auto Tire can't creep, because, in the first place, it doesn't have to be *forced* on (if you use the Goodyear Universal Rim). The 26-inch tire slides right on to the 26-inch rim as easily as you would put on your hat. It doesn't have to be pried over a 27-inch flange.

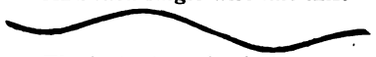


And next, at the first stroke of the pump, the tire begins to grip the rim like grim death, because there is a mesh or tape of piano wire vulcanized clear around the tire on each side of the base.

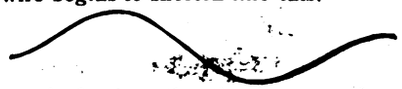
When the tire is flat these wires are like this:



And each single wire like this:



The instant you begin to pump, this wire begins to shorten like this:



And when the tire is pumped up hard, the wire mesh is like this:



If you put a Goodyear Auto Tire on a wood rim, and pump it up hard, the pressure will be so great that the base will squeeze a ridge in the wood.

So the Goodyear Auto Tire need be only *half* inflated, and it will still have a firmer grip on the rim than it is possible to secure with plates and bolts. This, however, is only *just one* of the good points of this trouble-saving tire.

You will find other points in our "Good News Book." It is vitally interesting to every manufacturer, dealer or user, for it shows the way to perfect relief from Tire Troubles. It's FREE. Ask for it.

THE GOODYEAR TIRE & RUBBER COMPANY - Grove Street, AKRON, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St.; and Detroit, 242 Jefferson St.

THE PREMIER MOTOR MANUFACTURING CO.

of INDIANAPOLIS, INDIANA

manufacturers of

PREMIER

THE QUALITY CAR

air cooled

will exhibit at the Sixth Annual Show of the

Automobile Club of America

in the 69th Regiment Armory

"The Old Show in the New Armory"

New York City, Jan. 13th to 20th

Also at the Coliseum, Chicago, February 3rd to 10th, 1906, where they will be pleased to meet old friends and greet new ones

GAS-AU-LEC

Elegant in Finish.

Luxurious in Appointments.

Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

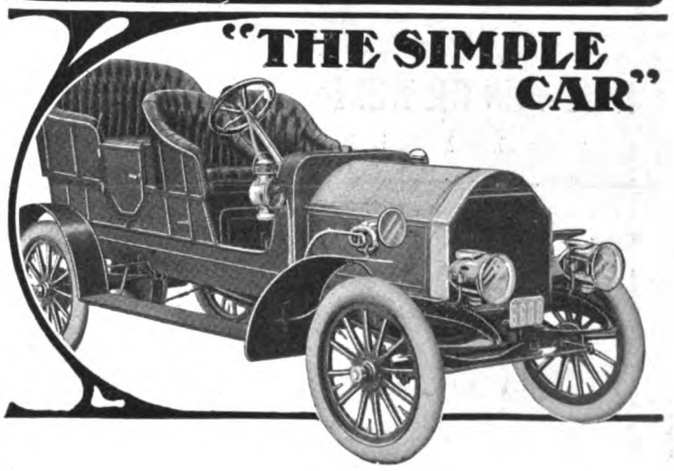
both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

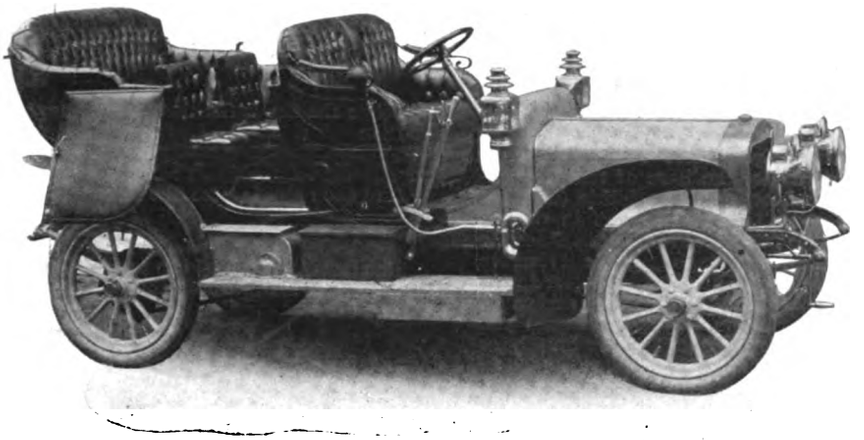
40-45 Horse-Power $5,000.

CORWIN MANUFACTURING COMPANY,

Peabody, Mass., U. S. A.



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BE SURE AND SEE THE

Acme Motor Car Exhibit

At the Sixth Annual Show of The Automobile Club of America

In the 69th Regiment Armory, Twenty-sixth Street, near Fourth Avenue

"The Old Show in the New Armory"

Demonstrations every day, of the New 1906 Model Acme Motor Cars

ACME MOTOR CARS

are built and designed to the smallest detail entirely and wholly by the Acme Motor Car Co. There are no bought parts for assembling—no unknown quantities.

EVERY ACME MOTOR CAR IS GUARANTEED FOR 365 DAYS

TYPE XV—TOURING CAR. Double Side Entrance Tonneau, seating seven persons. Divided Front Seats. Engine 45 H. P. Vertical, 4 Cylinder, Mechanical Valves. Transmission practically indestructible. Selective Sliding Gear, direct drive on 3rd speed. Speeds up to 60 miles an hour. Complete with Two Side Oil Lights, Two Acetylene Head Lights and Generator, Tail Light and Horn,—$3,500.

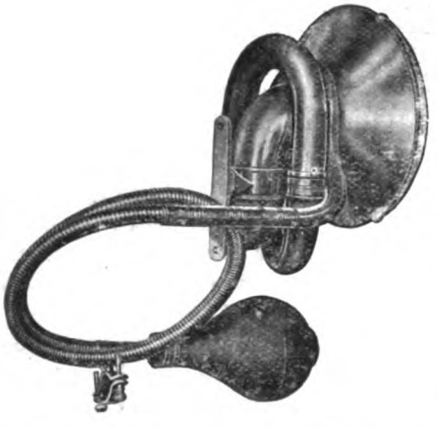
TYPE XIV. Of the same practical and thorough construction as Type XV. Greatly improved in arrangement and larger body than last year. Three Speed Sliding Gear Transmission, practically indestructible. Engine 30 H. P., 4 Cylinder, Vertical. Speeds up to 50 miles an hour. Complete —$2,750.

To Try an Acme Is To Buy an Acme

DEMONSTRATIONS AT THE NEW YORK SHOW OR BY APPOINTMENT.

ACME MOTOR CAR CO., Reading, Pa.

Here's a new horn that sells splendidly to the retail trade because of its handsome appearance and odd sound. It is called the Monstre. Dealers and jobbers can handle it to great advantage. We shall show the ful Volier line.



IS IT FUN OR BUSINESS THAT BRINGS

you to the show? If it is fun, you will find us very abstemious, Puritanical and stupid. If it's business we have some new things which mean rapid sales and good, long profits to you if you are a dealer. We shall show them to you and tell you the prices, at our space in Madison Square Garden. It will pay to see what we have.

THE POST & LESTER CO.,

Hartford, Conn.

THE MAN IN THE CAB

with his unswerving allegiance to duty, represents the care, forethought and consideration which the

LAKE SHORE

& MICHIGAN SOUTHERN RAILWAY

gives to every detail of its wonderful system for the easy and safe transportation of the thousands who annually travel from East to West, and vice versa, over their famous trunk line

Direct Connections Between Boston, New York, Buffalo, Cleveland, Chicago, Pittsburg, Cincinnati and St. Louis.

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER IMPORTER

WE CLAIM FIRST PLACE

We carry in Stock, and Offer for Sale, THE ORIGINAL ARTICLE

And do not substitute or offer SOMETHING JUST AS GOOD.

"TRY MILLER"

This expression has now developed into a TRADE TERM. The public, which in the past has experienced difficulty in obtaining automobile supplies, should give us a trial, by mail, or a personal visit.

We are rapidly developing our Automobile Supply Business so that, by constantly being on the lookout for novelties and supplies, we are occupying that position in the Automobile World, that we have held for so long in the Cycling World.

BRANCH HOUSES are being opened so that we may keep pace with the growth of the pastime, and the public may depend upon obtaining

EVERYTHING NEW GOOD MODERATE IN PRICE

ON THE GROUND FLOOR

We will exhibit, at the Automobile Show, held by The Automobile Club of America, at the 69th Regiment Armory, January 13th to 20th.

ROOM "K" MAIN FLOOR TO THE RIGHT OF ENTRANCE

Madison Square Garden, Space 139

Our Complete 1906 Catalogue will be ready February 1st, 1906, and will be the most complete catalogue of its kind ever issued, and will be mailed on request

JOBBER MANUFACTURER

CHAS. E. MILLER,

97-99-101 READE ST., NEW YORK, N. Y., U. S. A.

BRANCHES: Philadelphia, Pa.–318-320 North Broad St. Boston, Mass.–202-204 Columbus Ave. Cleveland, O.–406 Erie St.
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

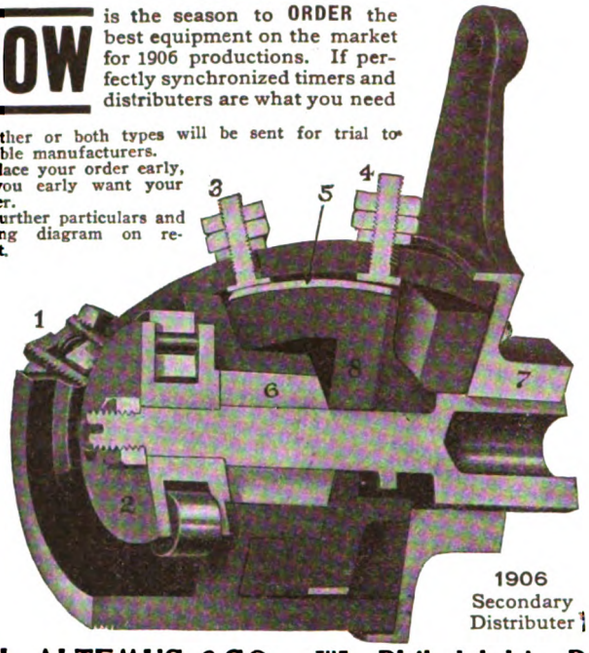
EXPORTER — IMPORTER

NOW is the season to ORDER the best equipment on the market for 1906 productions. If perfectly synchronized timers and distributers are what you need

Either or both types will be sent for trial to reliable manufacturers.

Place your order early, if you early want your order.

Further particulars and wiring diagram on request.



1906 Secondary Distributer

C. L. ALTEMUS & CO., THE BOURSE **Philadelphia, Pa.**

IMPROVED KELLY GENERATOR

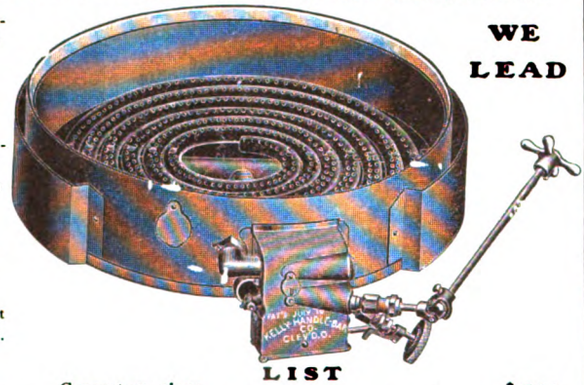
Tubular Burners and Casing for Steam Boilers

ARE UNEXCELLED

OUR new and Improved Burner is made of one continuous steel tube with cross tube below which is connected with each coil, giving an even distribution of gas over the entire surface of the burner.

The walls of the burner being of uniform size give a perfect and powerful fire.

No inconvenience or damage should the burner become red-hot, no back-firing as there are no air tubes swaged in the coils as is the case with a double sheet steel burner.



WE LEAD

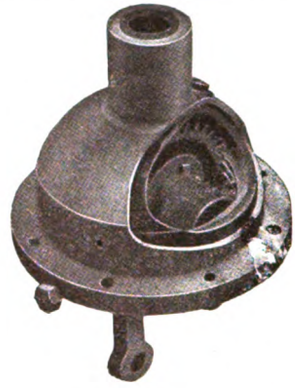
LIST

Generators alone,	$25.00
Burners for 14 inch Boilers,	20.00
Burners for 16 inch Boilers,	25.00
Burners for 18 inch Boilers,	30.00
Burners for 20 inch Boilers,	35.00
Burner Casings, extra,	5.00

Manufactured by the **KELLY HANDLE BAR CO.**

CLEVELAND, OHIO, U. S. A.

BROWN-LIPE GEARS



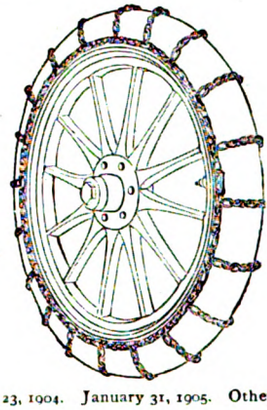
Irreversible Steering
Differentials
Transmissions (the latter all sold for the the present.)

ACCEPTED AS STANDARD

Weed Chain Tire Grips

ARE NECESSARY AS GASOLINE

QUICKLY ATTACHED



CANNOT INJURE TIRES

Patented August 23, 1904. January 31, 1905. Other Patents pending.

GIVE POSITIVE TRACTION

In Mud, Sand, Snow and on Wet Asphalt

Send for Folder M

WEED CHAIN TIRE GRIP COMPANY

28 Moore Street, New York

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER IMPORTER

PACKARD **ENAMELED**

PROOF AGAINST

Heat, Grease, Oil and Water

A nice majority of 1906 cars made in the United States will be equipped with it.



Combiuation High Tension



Combination Low Tension

Not a single complaint to date!

Samples and Prices?

THE PACKARD ELECTRIC COMPANY, Warren, O., U. S. A.

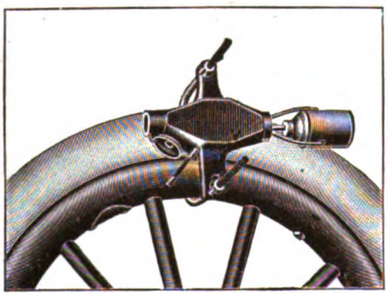
IGNITION **CABLE**

STITCH-IN-TIME VULCANIZER.
ANYBODY CAN USE IT.

Fully guaranteed to do as represented or money refunded, providing instructions are followed and nothing but first-class material is used.

PATENTED.

Price of Aluminum Vulcanizer, complete, F. O. B. Topeka, Kansas, U. S. A., $7.00 Net.

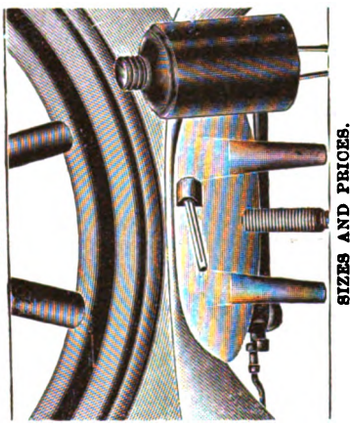


Price of Cast-Iron Vulcanizer, complete, F. O. B. Topeka, Kansas, U. S. A., $6.00 Net.

Iron vulcanizer weighs 6 lbs.; aluminum weighs 4 lbs., boxed.
Will vulcanize a patch 2½ by 3½ inches on any size tire from 2½ to 5 inches.

THE "PIG" VULCANIZER.

PATENTED.



SIZES AND PRICES.

Size to fit 2½ or 3-inch tires	$ 8.00
Size to fit 3 or 3½-inch tires	10.00
Size to fit 4 or 4½-inch tires	11.00
Size to fit 4½ or 5-inch tires	12.00

The "Pig" vulcanizers are made of aluminum only, and weigh from 4 to 7 pounds boxed, according to size.

Two cans cement and 6 inches square of Para free with each outfit.

In ordering, be particular to give the size of your tires.

Instructions for operation go with each outfit. Circulars upon application.

"Stitch-in-Time" Vulcanizer Co., Mfrs.
TOPEKA, KANSAS, U. S. A.



REMOVING

"UNEEDME" TIRE TOOLS

Remove the Largest Tires in 3 Min. Time

SIMPLEST **SAFEST** **SUREST**

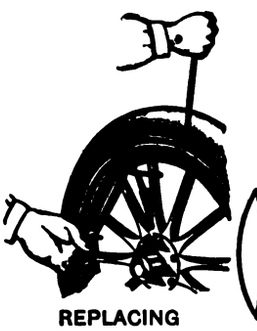
Simplest, because there is nothing to get out of order; **Safest,** because there are no sharp points or edges to cut the tire; **Surest,** because no matter what the size of the tire or the inexperience of the operator the tire can be removed in three minutes.

Think of the Saving in Time, Money and Trouble

Price Reduced to - - $2.50 Per Set

Write for Booklet. Special Inducement to Dealers

"UNEEDME" TOOL CO.
59 E. Spring St., Columbus, O., U. S. A.



REPLACING

JOBBER MANUFACTURER

CHAS. E. MILLER,

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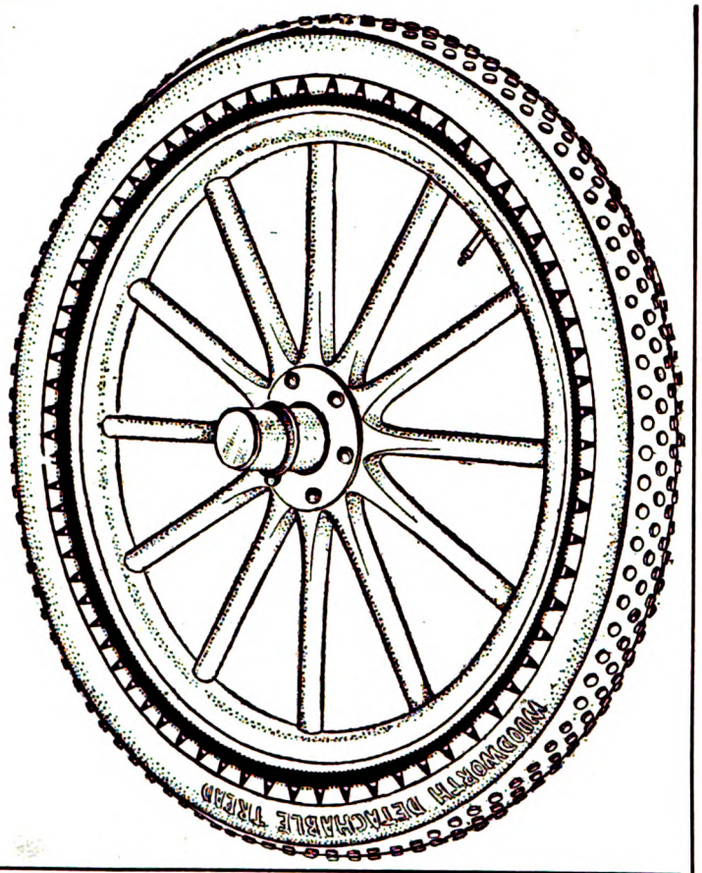
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER

IMPORTER



Woodworth Detachable Tread

FOR 1906

Is perfect in every detail. Our new construction making a partially flat tread, has the effect of increasing the wearing surface, and making the studded strip maintain its position exactly on the middle of the tire, even when the tire is flat. Our new wire side-ropes can be very quickly and easily adjusted, making it possible to apply the tread in less than 15 minutes, and with very little effort. The tread prevents punctures, skidding and wear. Suitable for any make of pneumatic tire, old, or new. Does not rot the fabric like a vulcanized tread. Adds to the appearance of the machine.

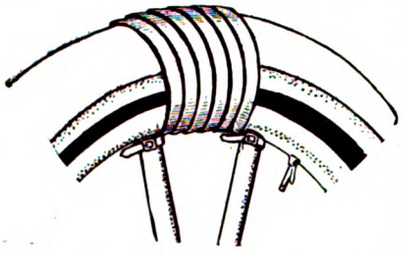
Compare our prices with others which do not give one-half the value.

PRICE LIST

26 x 2	$8.00 each
26 x 2½	10.00 "
26 x 3	11.00 "
28 x 2½	11.00 "
28 x 3	12.00 "
28 x 3½	14.00 "
30 x 2½	12.00 "
30 x 3	13.00 "
30 x 3½	15.00 "
30 x 4	16.00 "
32 x 2½	14.00 "
32 x 3	15.00 "
32 x 3½	16.00 "
32 x 4	18.00 "
34 x 2½	15.00 "
34 x 3	16.00 "
34 x 3½	18.00 "
34 x 4	19.00 "
34 x 4½	20.00 "
36 x 2½	16.00 "
36 x 3	18.00 "
36 x 3½	19.00 "
36 x 4	20.00 "
36 x 4½	22.00 "

The Automobile Tire Emergency Strap

DOES for the automobile tire what tape does for the bicycle tire. Made of special chrome leather absolutely unaffected by water. ¶ Is applied by buckling one end to a spoke, winding tightly around the partly inflated tire and buckling the other end. ¶ Will enable a person to run a hundred miles with a bursted, rim-worn or badly cut tire-shoe. ¶ Makes it safe to take long trips without an extra casing.



One size fits all tires.

PRICE, - - - $1.50 Each

For Sale by dealers, or sent postpaid on receipt of price.

LEATHER TIRE GOODS CO.

Sole Manufacturers

NEWTON UPPER FALLS, - - MASS.

JOBBER

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MANUFACTURER

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER

IMPORTER



LAMP COVERS FOR ALL MAKES

Prices, $1.00 to $1.75



GILBERT TIRE CASE

PRICES

Enamel Duck, - -	$4.00
Fabric Leather - -	5.00

CLOSED



OPEN



INNER TUBE CASE

Price, $1.50





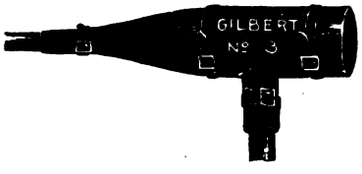
STORM APRONS

Runabout Size, - - - - -	$10.00
Tonneau, " - - -	$14.00 and $16.00



SLEEVE PROTECTORS

Per Pair, $1.50





TOOL ROLLS

PRICES

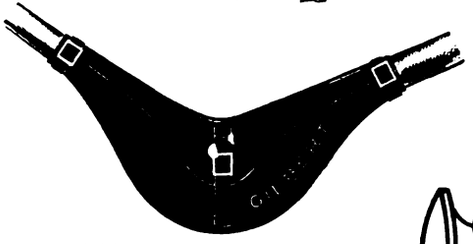
Without Tools,	$2.00
With Tools, -	6.50



RAW HIDE BANDS

PRICES

Plain—all sizes, - - -	$1.25
With Non-Skid Rivets, - - -	1.50



STEERING KNUCKLE BOOTS

PRICES

Enamel Duck - - - - -	$0.50
Leather - - - -	75c. to 1.00

JOBBER

MANUFACTURER

CHAS. E. MILLER,

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EXPORTER

THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

IMPORTER

NOTHING

produces a more brilliant lustre, gives better satisfaction, works easier and faster, and wastes less than

"GLOBE" METAL POLISH



IT WILL NOT

Eat Away or Wear Off the Metal

It is an Absolutely Pure Polish

SOLD BY

CHAS. E. MILLER

Miller's "Diamond" Vulcanizing Substitute



Tourist Kit. For tourists we furnish a kit packed in a wooden box with sliding top, ¼ pint each Cement and Acid Cure, a piece of emery cloth and 2 brushes for applying cement and acid.

Price, Each, $1 20

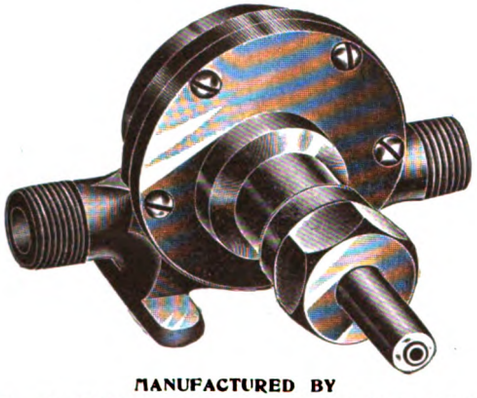
For Shop Use. We furnish this substitute in boxes containing one pint each or one quart each, cement and acid solution.

Price. $1.50 and $2.75

MILLER'S Anti-Freeze Compound



Ten pounds of this compound added to two gallons of water will not freeze at 15 degrees below zero. Price of 10-pound can, $1.00.



THE "ADVANCE"

SLOW SPEED

Rotary Circulating Pump

NOT "BETTER THAN EVER"

BUT "BETTER THAN ANY"

Made Right First

Made Same Way Now

All Bronze and Brass

TWO SIZES { ½ INCH PIPE / ¾ INCH PIPE

MANUFACTURED BY

BOCK & SEVERIN

310 W. Chicago Ave. CHICAGO, ILL.

Efficiency of these pumps is illustrated by the fact that our ½-inch size is successfully cooling a number of 4 cylinder 4½" x 5" motors running at ½ motor revolutions.

JOBBER

CHAS. E. MILLER,

97-99-101 READE ST., NEW YORK, N. Y., U. S. A.

BRANCHES: Philadelphia, Pa.–318-320 North Broad St. Boston, Mass.–202-204 Columbus Ave. Cleveland, O.–406 Erie St.
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

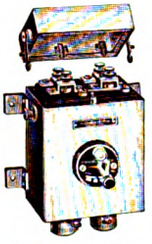
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PITTSFIELD IGNITION SPECIALTIES

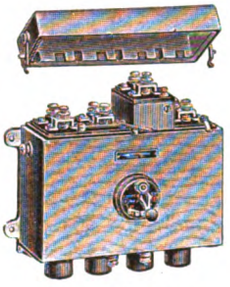
For 1906



Single Cylinder
Dash Coil



Two Cylinder
Dash Coil



Four Cylinder
Dash Coil

Pittsfield Spark Coils

are as nearly perfect as it is possible to make them. The insulation is of the best and we guarantee that it cannot be punctured or ruptured. It has an extremely fast vibrator, and all adjustments are by lock nuts. Made for one, two, three four and six cylinders, dash type; and one, two, three and four cylinder box type. Smallest and most efficient American Coil made.

The 1906 Jewel Spark Plug

is of the same excellency of manufacture that has made this plug so popular throughout the country, the difference being that it is much shorter, the core being ground on a taper into the shell, which makes it easy to remove and clean, and it is also made with a novel connection which does away with the binding nut and also obviates the trouble of twisting the core by a person using a wrench or plyers for fastening the nut. The advantage of a plug of this kind can readily be seen. We are daily receiving large orders for them.

The 1906 Pittsfield Timer and Switch are now ready

For further information address

PITTSFIELD SPARK COIL COMPANY

Pittsfield, Mass.



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SCOTT'S MUFFLER

NECK EAR FACE & CHEST

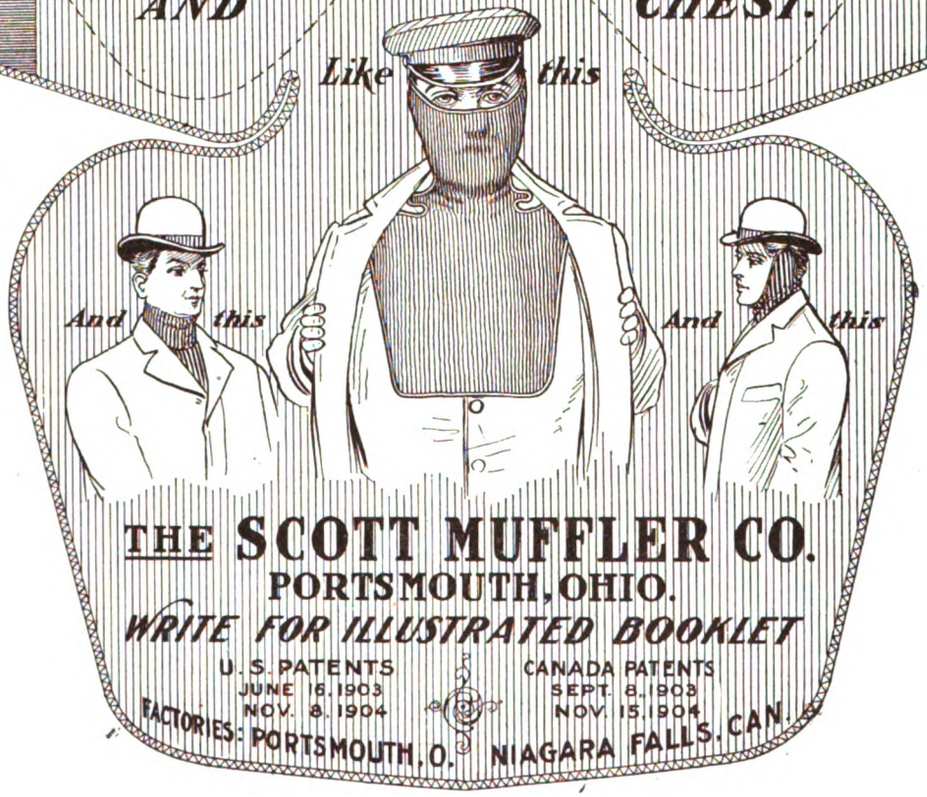
MAKES ZERO WEATHER PLEASANT
FOR LADIES, MEN, BOYS, GIRLS AND CHILDREN.

Dotted lines show how far tabs fold into Pocket formed by lining of Muffler.

ALL IN ONE PIECE—FASTENS AROUND THE NECK.

A COMPLETE PROTECTION FOR
THE FACE, EARS, NECK
AND CHEST.

Can be worn three different ways.



THE SCOTT MUFFLER CO.
PORTSMOUTH, OHIO.

WRITE FOR ILLUSTRATED BOOKLET

U. S. PATENTS
JUNE 16, 1903
NOV. 8, 1904

CANADA PATENTS
SEPT. 8, 1903
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FACTORIES: PORTSMOUTH, O. NIAGARA FALLS, CAN.

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Rands Manufacturing Company

MACOMB AND BEAUBIAN STREETS : : : : : DETROIT, MICHIGAN

We manufacture **TOPS** for any make of car

Factory Capacity 5,000 Tops per annum

Cape and Extension Tops clear body when down. Storm Fronts. Heavy Re-inforced Sockets.

Our Patented Extension Tops, Semi Limousine and Canopy Tops with concealed body irons are high class.

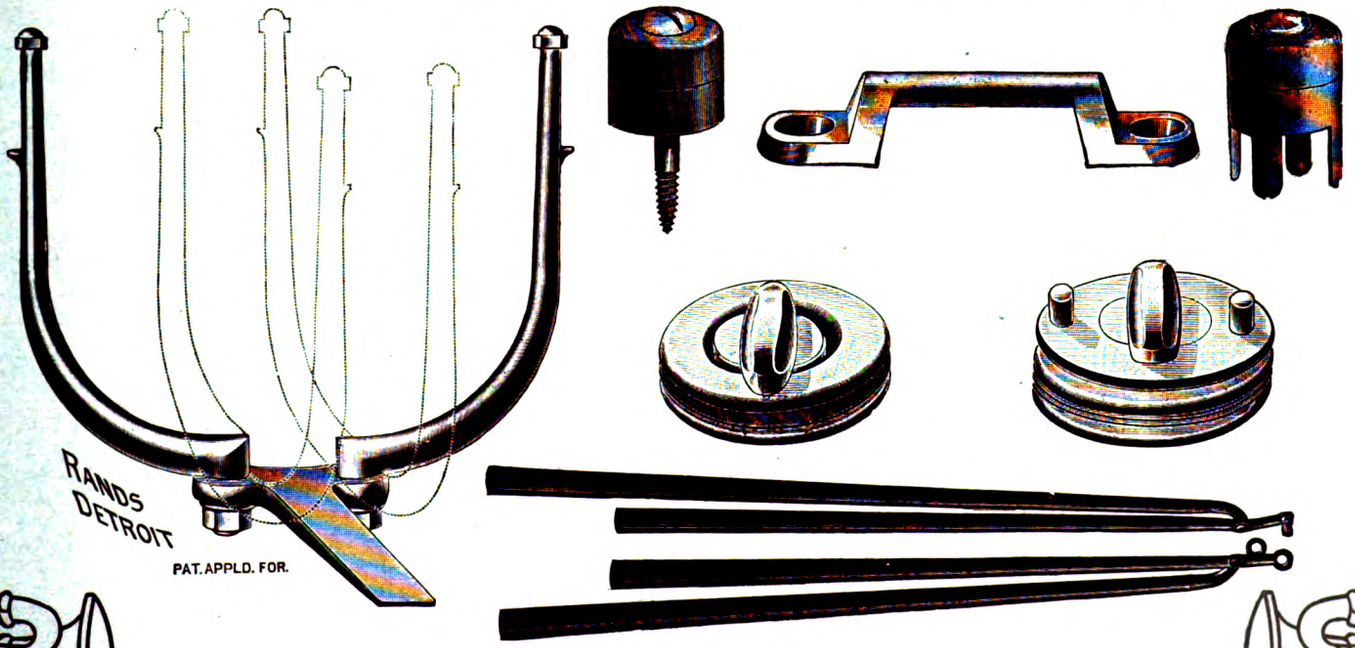
Extension Top with either Slat Iron or Socket Construction. Also Joints if desired.

WM. C. RANDS

Manufacturer and Jobber of

Automobile Equipment, Top Materials, Bowsockets, Supplies, Adjustable Lamp Brackets, Concealed Body Irons, Etc.

51 to 55 Macomb Street *DETROIT, MICHIGAN*



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Never Miss
PLUG
For 1906

Patent Applied for

Imported Porcelain
Can't Short Circuit
Can't Soot Over
Greatest Air Space
Electrode and Cup Shaped Cap Made From One Piece Steel
All Jar Taken From Porcelain
Expansion Allowed For
Just Original Spark Plug Sense
NO TROUBLE WITH A NEVER MISS
Any Thread

FULLY GUARANTEED
$1.50

Charles E Miller, Eastern Agent.

YOU HAVE TRIED THE REST
NOW TRY THE BEST—NEVER-MISS

33 1/3 per cent. more of real Automobile and Motor Boat satisfaction if you will join the army of over 200,000 of satisfied motorists who use and swear by the Never-Miss Plugs, Coils, Chain Tools, Battery Connections, Terminals and Voltammeters.

PORCELAIN PLUGS, MICA PLUGS, LAVA PLUGS, } ANY SIZE, ANY CAR, THE RIGHT PLUG AT THE RIGHT PRICE. **$1.50**

Ignition troubles ended with Never-Miss.
One-third faster, one-third farther, and besides you get back.

Just a Step Ahead in Quality And a Step Behind in Price

When a competitor gets out his little hammer he is our best advertiser. You know the game.
Every Knock a Boost.

Don't throw away those Batteries. Four out of five may be good. Find out with a Never-Miss Combination Voltammeter. Absolutely reliable and fool proof. Can't get out of order. No wheels or springs. Gives the voltages and amperes. Just right size for pocket. Complete, with a Russia leather case, $5.00. You can save the price of one the first 3 months.



Never-Miss Connections used by 90 per cent. of the manufacturers and jobbers in 1905. Poor connections cause endless trouble. Avoid by getting the non-trouble kind. Get the corrugated terminals, they do not cost any more but are 100 per cent. better. 50c. the doz.

NEVER-MISS
Handy Chain Repair Device



The above cut shows the biggest little device on the market. Chains repaired in 5 minutes. No soiled hands or temper. Your tool kit incomplete without one. Get one to-day, you may need it to-morrow. 75c.

NEVER-MISS SPARK PLUG CO., LANSING, MICH.

Witherbee Storage Battery Igniter



Over 12,000 Now in Use.
Present Capacity 1200 Batteries Per Week
"Every Battery Guaranteed
Every Customer Satisfied."

Recognized as the Most Satisfactory Means of Ignition

This battery is now endorsed and used exclusively by 45 of the leading automobile and motor boat manufacturers.

Every battery guaranteed to give satistfaction or purchase money refunded.
Can you afford to consider anything else for your '06 equipment?
Write for descriptive pamphlet.

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

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MONEY makes the mare go. PETROLEUM makes the motor go
But the OIL that makes the car go best, is known as

LUBROLEINE

LUBROLEINE Non-Carbonizing Cylinder Oil for Gasolene Motors.

LUBROLEINE CYLINDER OIL
For Steam Motors





This oil is especially manufactured for lubricating the Cylinders of Gasoline Motors It has a high fire test, **will not carbonize** or gum, and is perfectly safe.

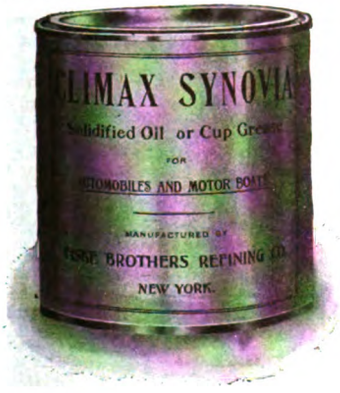
LUBROLEINE ENGINE OIL
For Bearings



Packed in 1, 5, 10 gal. cans, barrels and half bbls.

CLYMAX-SYNOVIA

Solidified Oil or Cup Grease
FOR AUTOMOBILES AND MOTOR BOATS

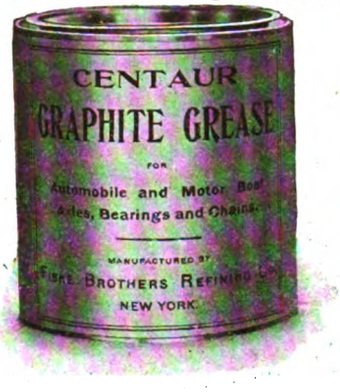


This high grade lubricant is a combination of the finest grades of mineral lubricating oils. It is impervious to heat, cold, water or steam. Will not gum, and contains no acid, alkali, or any ingredient injurious to finest metal surfaces.

It is not affected by climatic changes, and retains its consistency under all ordinary degrees of temperature.

CENTAUR GRAPHITE GREASE

For Automobiles and Motor Boats, Axles Bearings, Chains and Gears



This preparation is a perfect combination of the finest American graphite and a high grade lubricating grease. While it is of a pasty consistency, it is not affected by climatic changes. It is impervious to heat, cold, water or steam; will not gum, and contains no acid or any ingredient injurious to the finest metal surfaces.

Its anti-friction qualities are unexcelled.

Packed in 1, 2, 5, 10, 25, 50 lb. cans. barrels and half bbls.

MANUFACTURED BY

FISKE BROS. REFINING CO., 13 & 15 Old Slip, NEW YORK

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HERZ-TIMER
BOUGIE MERCEDES
PUCK SWITCH
PATENT SAFETY SWITCH
HERZ DISTRIBUTOR
OSCILLUM REDIVIVUS
B. B. PUMP
COMPLETE IGNITION OUTFITS

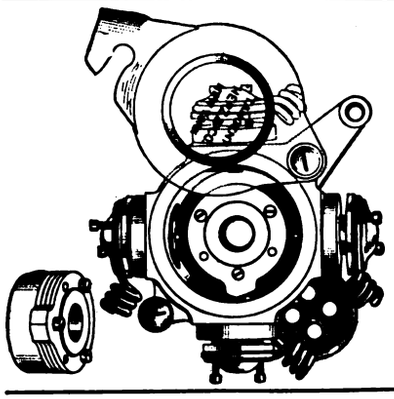
HERZ & CO.

CIVIL ENGINEERS

MAKERS OF THE FINEST IGNITION MATERIAL

BERLIN. PARIS. 187 Elm Street LONDON. VIENNA
NEW YORK

GUENET-COILS
WHISTLE TANKS
CABLES & WIRES
ARMORED IGNITION CABLE
DETACHABLE CABLE TERMINALS
WIRE TERMINALS WITH GROOVE

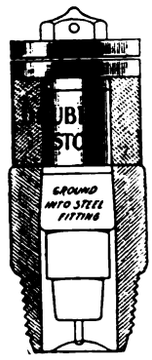


Herz Timer

One of 10 Models

The Best Circuit Breaker Made

We fit any Motor



Bougie Mercedes 1909

Absolutely Self-Cleaning

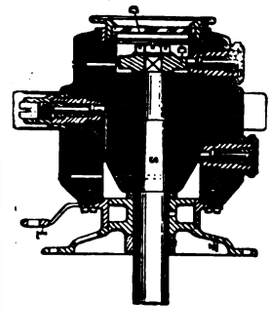
Here's testimony:

"Dec 11, '05.

"I have been using 2 of your plugs since November, *two years ago*. I should say seven days a week. . . .

"ARTHUR W. YALE,
"1525 Chestnut, Street.
"Phila., Pa"

Price, $2.



Herz Distributor

for DASHBOARD

Scientifically and Mechanically Perfect

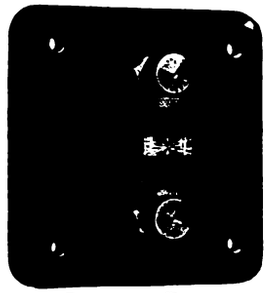
One Coil for all Cylinders

Price, $80



Puck

The Switch with all contacts under dust and Water-Proof Cover



DASHBOARD TYPE

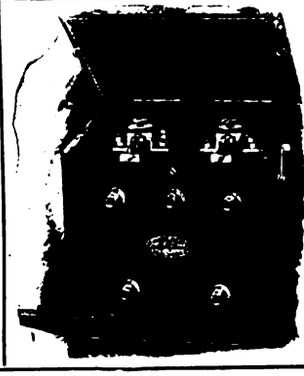
Oscillum Redivivus

A Spark Intensifier and Spark Indicator

It shows if Coil and Plugs are Working

Price, $1

Dashboard $1 50



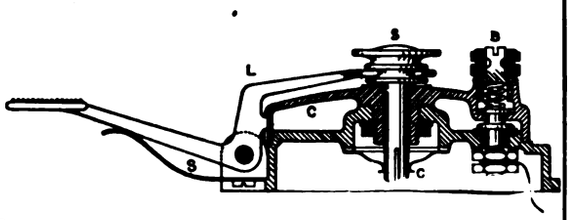
Guenet Coils

The Finest French make

Price

1 cyl. — 16
2 cyl. — 29
3 cyl. — 48
4 cyl. — 59

Reduction for J. G. Vibrator



Herz's Patent Foot Lever Switch

A LIFE SAVER PAR EXCELLENCE

Save your Tires and use the Meter as a Brake

Price, $5.00

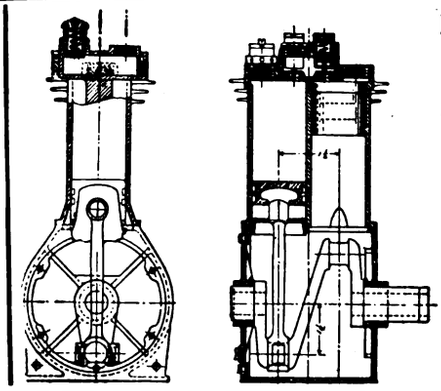


Herz Patent Groove Terminals

Assorted Boxes

60c.

with full instruction



B.B. Pump

A Power or Hand Air Pump

Double Piston Safety Valve

Height, 9 in.
Weight, 7 lbs.

Price, 25c.

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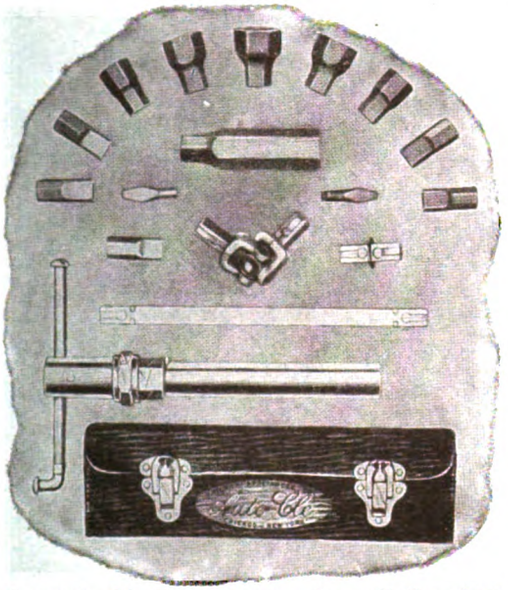
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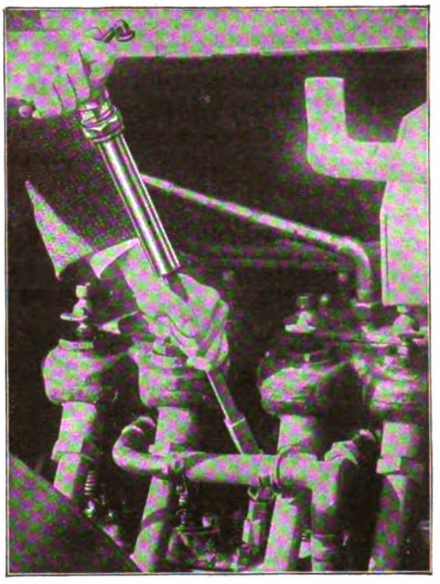
The Auto-Cle Wrench



The Auto-Cle Wrench comprises all the above parts, and they are all carried in the leather case shown above.

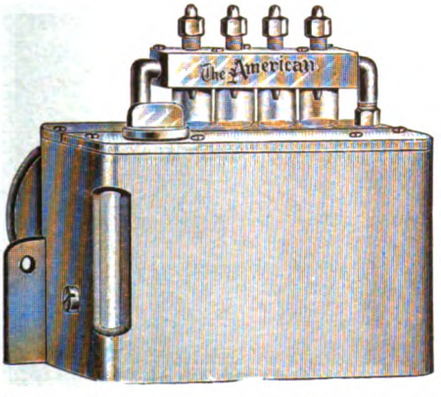
THE Auto-Cle Wrench fits any nut on any car. Saves time, trouble and expense.

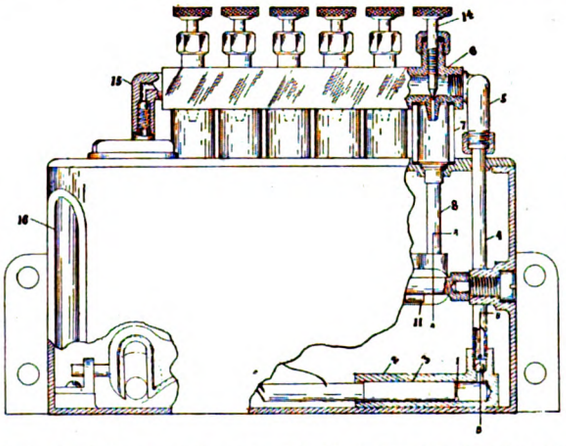
It is made in two sizes, the individual or regular set; the large or shop set.

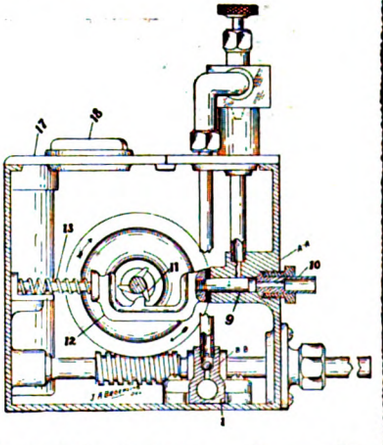


This illustration shows how the Auto-Cle can be used easily in any space and at any angle.

"COLUMBIA" A Positive Mechanical Automobile Lubricator







We show a Six-Feed Lubricator in illustration, but same can be constructed with any number of feeds desired; this Lubricator is also constructed with either Rotary or Ratchet Drive; the body is made of aluminum and highly polished; the Sight-Feed Bridge, Packing Nuts, Stems and elbows as well as Filler Plug are made of brass, highly polished and plated.

American Lubricator Co., 93-97 Catherine St., Detroit, Mich., U. S. A.

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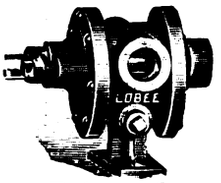
EXPORTER IMPORTER

Improve your circulation

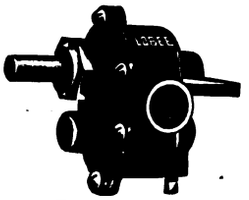
THE LOBEE

Circulating Pumps

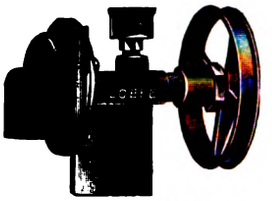
have a train of satisfied users everywhere—are the most universally endorsed of any Pumps made.



Patented



Gear Pump



Centrifugal Pump

If you want good circulation on your Automobile, Launch or Motor Boat, use

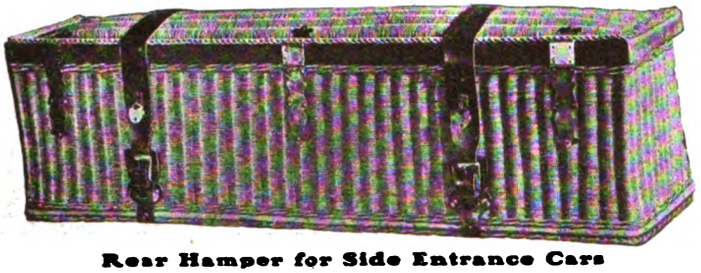
A LOBEE PUMP AND NOT AN IMITATION.

There are more LOBEE CIRCULATING PUMPS in use than all other makes combined which demonstrates their efficiency and durability

Write for Booklet—It's Interesting

LOBEE PUMP & MACHINERY Co. (Inc.,) 140-152 Terrace, Buffalo, N. Y., U. S. A.

"BAY STATE" HAMPERS are the best for design, material and money



Rear Hamper for Side Entrance Cars

Are water and dustproof. We make several styles of Hampers for side entrance cars, which conform to the body and add to the appearance of the car.

Prompt Deliveries. Made by the

RATTAN NOVELTY CO.

Springfield, - - - Mass.

AUTO SAFETY DRIP PAN

MADE OF

Heavy Galvanized Steel with Heavy Rod in Rim



No. 1. Runabout, size 35 in. x 47 in......

No. 2. Touring Car, size, 35 in x 95 in......

Placed on floor under auto the pan catches all oil, grease and gasoline. **Easily cleaned.** Keeps floor bright and clean.

This pan has no **sharp edges** and when on floor, if auto is backed over edge it will not **injure the tires** nor injure the pan.

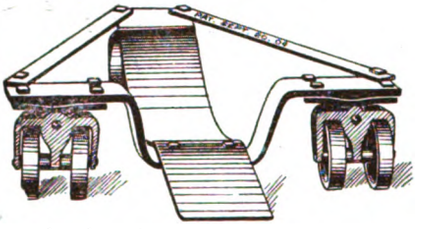
ALL PANS ARE SHIPPED SECURELY CRATED

PRICES ON APPLICATION

Dover Stamping & Mfg. Co.

385 Putnam Ave., Cambridge, Mass.

THE HANDY TRUCK



For moving automobiles in the crowded garage; in the private barn; in the work and paint shop; in the factory. One man can load and push the automobile sidewise to any desired position in one-half the time it takes to tell you about it. **Time is money—it saves time.**

In all lines of warehouse work this is the most useful **Patent Truck** on the market. Two men and **only** two **Handy Trucks** can load the largest automobile for shipment easily. Try them and you will never be without **The All-Steel Handy Trucks** Weight only twenty-three pounds each. The cheapest and best. **Once used always used.**

PRICE $15 PER PAIR

Chas. E. Miller, *Selling Agent*

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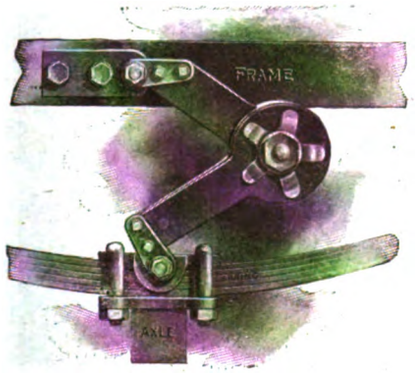
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IMPROVED

Truffault-Hartford

SHOCK ABSORBER

Insist that your car be equipped with the original Truffault-Hartford Shock Absorber



Increases the speed. Enables cars to proceed at highest speed over all obstructions. Doubles the life of tires. Prevents lost traction. Absolutely prevents breaking of springs. Makes cobble-stones and rough roads seem like asphalt.

New model absolutely self-adjusting.
Requires no attention after application.

Adopted by the Pierce Great Arrow, Locomobile, Matheson, Richard-Brasier, Peugeot.

DON'T BE MISLED BY DEVICES MADE ON PRINCIPLES WHICH WE HAVE DISCARDED

CARS UNDER 1,500 LBS , $40 00 (Four Suspensions)

CARS OVER 1,500 LBS., $60.00 (Four Suspensions)

HARTFORD SUSPENSION COMPANY

We are the Sole American Agents for the Celebrated Gobron Brille.
"The finest Automobile in the world."

E. V. Hartford, President.

67 Vestry Street, NEW YORK

JOBBER

CHAS. E. MILLER,

97-99-101 READE ST., NEW YORK, N. Y., U. S. A.

BRANCHES: Philadelphia, Pa.-318-320 North Broad St. Boston, Mass.-202-204 Columbus Ave. Cleveland, O.-406 Erie St.
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IMPORTER

PERFECT IGNITION

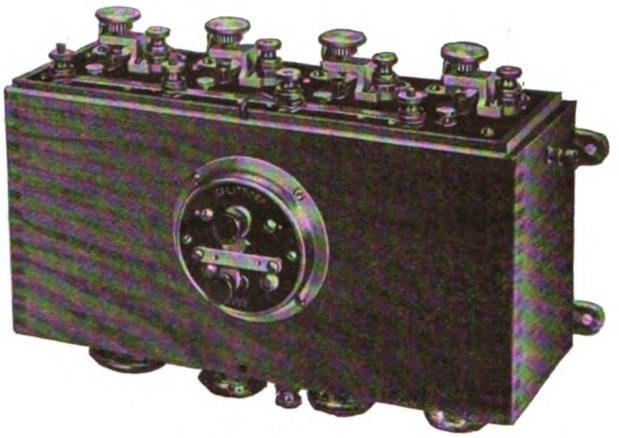
IS ADMITTED BY THE KNOWING ONES TO BE POSSIBLE
ONLY WHEN

SPLITDORF IGNITION

IS USED.

See Our 1906 Types

All prominent Manufacturers use our apparatus if they have an eye to please their customers by minimizing the chances for trouble



1906. Four Cylinder Dash Coil,
WITHOUT COVER



1906. Four Cylinder Dash Coil.
WITH COVER

Don't Forget Our Exhibits at Both Shows

You will see something new in ignition and will leave a satisfied visitor.

C. F. SPLITDORF, 17-27 Vandewater Street,

NEW YORK, N. Y.

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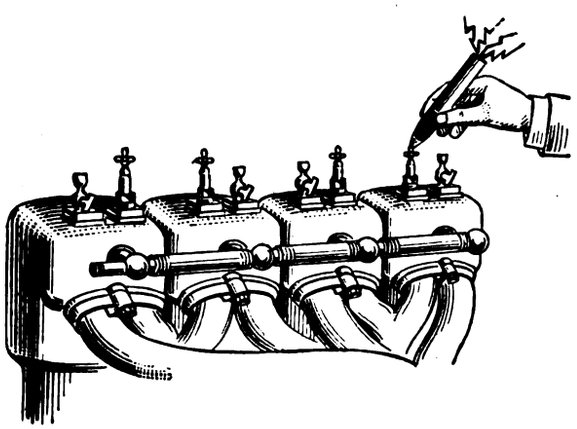
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

IMPORTER

SMITH'S SPARK TESTER AND SKIP FINDER





SMITH'S SPARK TESTER—(Full Size)

This little instrument is of great value to all motorists. By its use they are enabled to ascertain the nature and intensity of the spark which is occurring at the sparking point to spark plug, while the plug is in the cylinder and under compression, thereby doing away with the necessity for removing the spark plug from the cylinder and testing same and trying another plug to see if any trouble they may have is due to a fouled or imperfect spark plug.

Price $2.00

MANUFACTURED BY

DUCK BRAKE COMPANY

335 Broadway, N. Y.

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

EXPORTER — IMPORTER

The CELEBRATED BRAMPTON CHAINS Made from Self-Hardening Steel



SCIENTIFIC AMERICAN

MUNN & CO.

361 Broadway, New York

May 22, 1905.

Chas. E. Miller,
97 Reade St.,
New York City.

Dear Sir:-

I wish to express my appreciation of the Brampton chain, one of which I have recently given a severe test on a single cylinder touneau, the chain for which is small for the power it has to transmit. Last season I tried three kinds of the best domestic chains with the result, that each one was worn out at the end of about 500 miles. Owing to a quick-gripping clutch, I was constantly experiencing a broken chain.

As soon as I was able to procure a Brampton chain of the proper size, I equipped my machine with it. I recently made a 250 mile trip through the Berkshire region of Massachusetts, cutting directly across country from Northampton to Adams, over some very hilly and rough roads. During this trip the chain was submitted many times to terrific jerks when pulling the car out of mud holes and starting it on hills, these jerks being much greater than would ordinarily be experienced owing to a fiercely-gripping clutch; throughout all this severe test the chain never failed me. At the end of the trip, and after running it altogether something over 500 miles, an examination showed only a slight wear on the inside of the rollers, causing a very little play of these on their bushings. The chain otherwise looked as new. Best of all however, is the fact that I can now go motoring without the constant dread of a broken chain, the repair of which is the direst of all jobs that the automobilist has to encounter.

Yours very truly,
J. H. Bach.
Auto. Editor of the Scientific American.

Note Heavy Chamferred Side Plates. — All Parts of this Chain Polished. — Fits Sprockets Without Friction



TWO PAIRS OF CHAINS IN 75,000 MILES

BRAMPTON BROS., Ltd.

EALING, LONDON, February 13, 1905.

Dear Sirs:—We are using a Napier Car for conveying our "RISIN' SUN" METAL POLISH throughout ENGLAND, calling at the various stations en route to replenish the loads. We estimate the car has now covered a distance of 75,000 miles in about three years and five months, running daily with scarcely any delay, the only renewals worth mentioning were Brasses to Pistons, Chains only once (BRAMPTON'S), tyres frequently, CONNOLLY'S large solids have proved the most durable.

Yours faithfully, JOHN EDWARD SHARP & SON.

YOUR AMERICAN CAR

CAN BE AND WILL BE FITTED WITH THE CELEBRATED BRAMPTON CHAIN IF YOU ORDER IT THAT WAY, AND IT WON'T COST YOU OR THE MANUFACTURER ANY MORE THAN AN INFERIOR CHAIN. ALL STANDARD SIZES IN STOCK TO FIT AMERICAN AND FOREIGN CARS.

We are Sole United States Agents for this Line of Chains, and are ready to Quote Manufacturers Interesting Prices on American Standard Sizes. *Catalog Mailed on Request*

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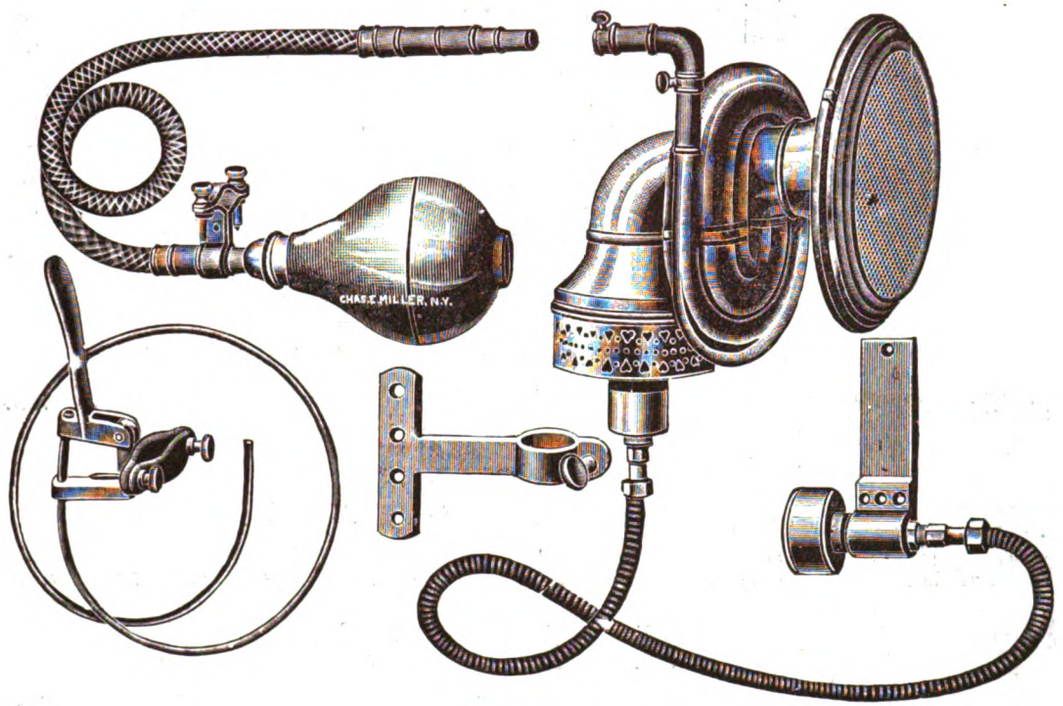
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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

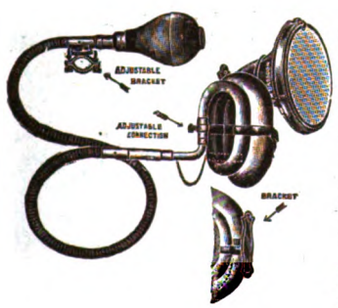
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Miller's Combination Siren Horn

This is a combination of the ordinary horn and the Siren Horn, and the only one of the kind on the market. Special Catalog mailed on request. Price of this combination horn is **$50.00.**

"La Bassoon" Horns



This is one of the latest ideas in a horn and is distinctly new. You will notice from the cut that this horn is made with an extra coil in the body of the horn similar to "La Tuba." This extra coil has the result of producing a very deep and musical tone. All our horns are spun from heavy brass and are highly polished. The illustration shows the adjustable bracket fitted to both horn and tube so that they may be attached to any kind of a car and in any position desired. The reeds and bulbs are guaranteed for one year.

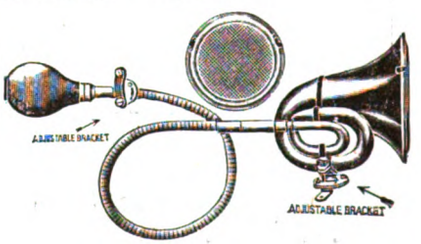
No. 15 L. B. Diameter of bell, 7 inches. Polished brass only. Complete with 40 inch flexible tube and screen, **$9.50.**

No. 14 L. B. Same as No. 15, except diameter of bell is 6¼ inches. Price, complete, **$8.00.**

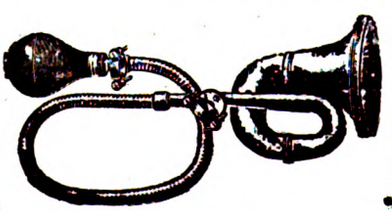
"La Tuba" Horn

This is another one of the latest (double bend) style of horns, similar to "La Bassoon." Fitted with adjustable brackets and produces a deep and lasting tone. Three sizes, complete with tube. Price each,

$7.00, $8.50, $9.50



No. 8, Our Leader



This horn is fitted with 40-inch tube, screen and adjustable brackets. Diameter of bell, 5¼ inches. Furnished in polished brass and nickel plated. Price, complete, as above, **$4.50.**

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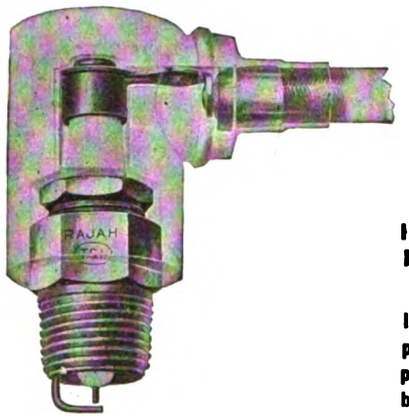
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IMPORTER



THE RAJAH SPARK PLUG AND HOOD FOR MARINE MOTORS

THE "RAJAH" Spark Plug

IS CREATING A SENSATION AMONG AUTOMOBILE OWNERS, MANUFACTURERS AND THE TRADE ON ACCOUNT OF ITS NOVEL FEATURES AND SIMPLE CONSTRUCTION

It embodies no freak idea or experiment; is easy to repair or replace porcelain, and is thoroughly mechanical throughout. The form of porcelain is such that the plug is as "Soot-Proof" as any plug can be. The Rajah Clip Terminal snaps into place, making instantaneous connection



ASSEMBLY OF RAJAH PLUG

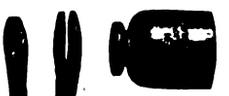


RAJAH S. P. TERMINAL

NO CHANGE IN CONSTRUCTION AFTER THREE SUCCESSFUL SEASONS—AS NONE IS NECESSARY

IGNITION ABSOLUTELY SURE

RAJAH AUTO-SUPPLY CO., 140 Washington St., N. Y. City



RAJAH COIL TERMINAL



MILLER'S "DIAMOND" Vulcanizing Substitute

TOURIST KIT. For tourists we furnish a kit packed in a wooden box with sliding top, ½ pint each Cement and Acid Cure, a piece of Emery Cloth and 2 brushes for applying Cement and acid.

Price, each $1.20

For Shop use. We furnish this substitute in boxes containing one pint each or one quart each, cement and acid solution. **Price, $1.50 and $2.75**

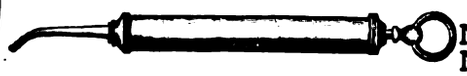


MILLER'S ANTI-FREEZE COMPOUND

Ten pounds of this compound added to two gallons of water will not freeze at 15 degrees below zero.

Price of 10-pound can, $1.00

MILLER OIL GUN



Furnished in polished brass

No. 1, size of barrel, 1 x 8 inches. Price, each $0.75
No. 2, size of barrel, 1¼ x 9 inches. Price, each 1.25

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THE LARGEST AUTOMOBILE SUPPLY HOUSE IN AMERICA

IMPORTER



Improved No. 4A Porcelain Plug. $1.50

STA-RITE
"STAYS RIGHT THE LONGEST"

The BEST PROOF

in the world that "Sta-Rite" plugs stay right longer than any other plug is the fact that they are used exclusively by the largest and most critical manufacturers.

THE R. E. HARDY CO.,
225 West Broadway,
New York City

FORD MOTOR COMPANY
Automobile Manufacturers
DETROIT, MICHIGAN, Dec. 6, 1905.

GENTLEMEN:

We enclose herewith our order No. 9159 for 10,000 Sta-Rite plugs, same as we used last season.

Will say that we estimate our requirements for the season to be about 35,000 plugs and will forward further specifications a little later.

Very respectfully,
FORD MOTOR CO.
By J. H. O'BRIEN.

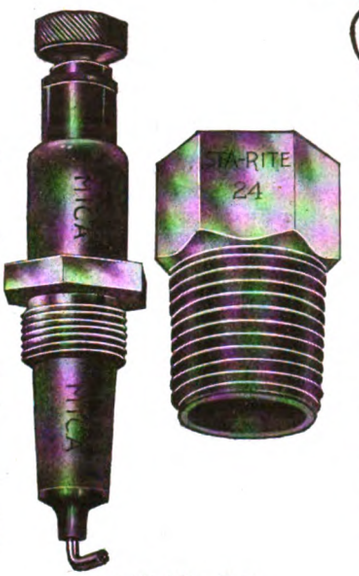
O. B. W.

OUR DETROIT BUSINESS ALONE WILL APPROXIMATE 70,000 PLUGS IN 1906

We have six types of ignition plugs, forty-seven sizes. We meet requirements of all manufacturers; and dealers find our line complete, satisfying and profitable. Send for new twenty-four page catalogue of plugs and coils.

See our Exhibit, Space No. 78 at Garden, No. 61 at Armory, No. 178 Coliseum, Chicago

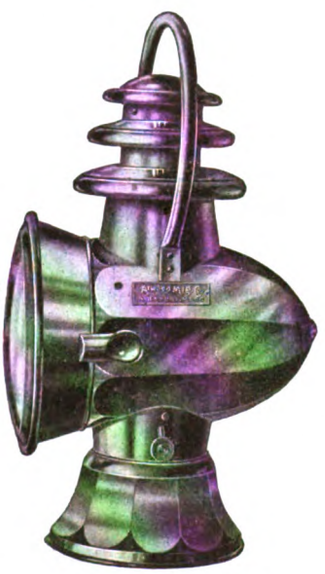
The R. E. HARDY CO., 225 W. Broadway, N. Y. City



Separable Mica Plug, ½", No. A24. $1.75.

ATWOOD MFG. CO., High Grade Lamps and Generators

No. 31 Oil Sidelight

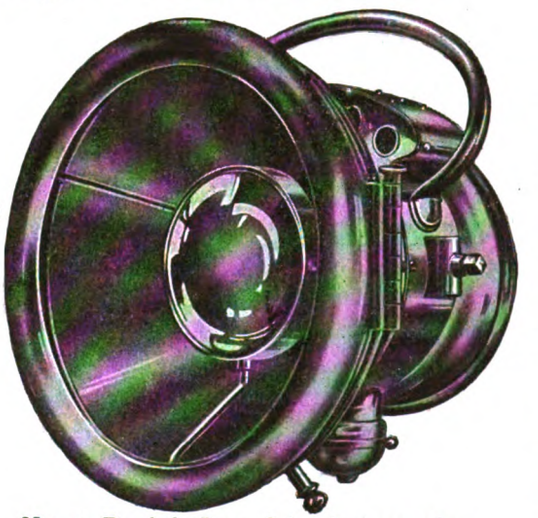


VERY LATEST.

No. 31. Oil, $12.00 per pair.

Height, exclusive of bail, 12½ in.
Diameter of glass, 6¼ in.
Length of body, 8 in.

Parabolens No. 33 Gas Headlight



No. 32 Parabola Lens, 8 in., $32 per pair.
No. 33 Parabola Lens, 9 in., $40 per pair.

Dimensions of No. 33.
Height, exclusive of bail, 10½ in.
Length, 10⅝ in.
Diameter of glass, 9 in.
Distance between lug centers, 7 in.
Diameter of lug hole. 15/32.

No. 32 size smaller than No. 33, made without Parabola Lens and with Bausch & Lomb Mangin Lens Mirrors at same price.

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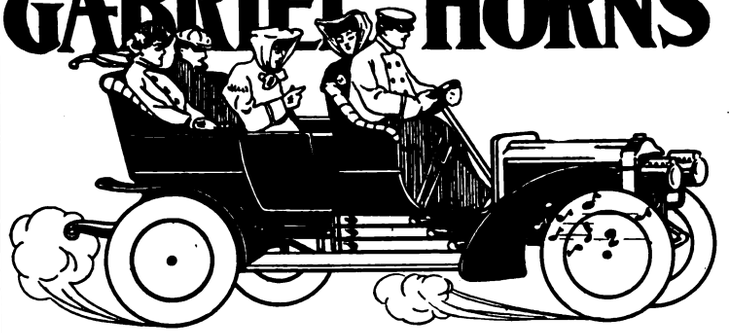
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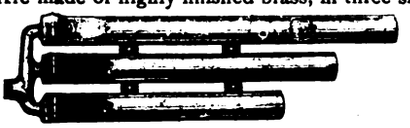
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GABRIEL HORNS



Blow from exhaust, enabling the driver to give entire attention to the car, eliminating constant watching which mars the pleasure of an auto ride.

Warn without frightening, having a clear, far-sounding musical blast. Are made of highly finished brass, in three sizes.



Nothing to get out of order and are easily attached to any car—steam or gasoline.

Have you heard our eight chime horn? An octave on which you can play any tune.

When purchasing be sure the horn has our trade mark.

The Gabriel Horn will be on exhibition at the New York Automobile Show, Madison Square Garden, and No. 20, 69th Regiment Armory.

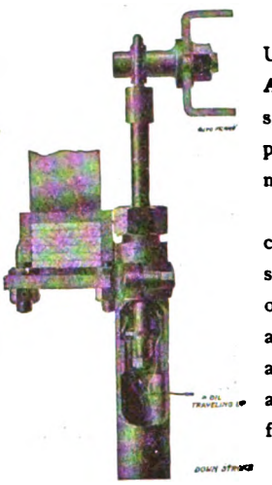
Write for Catalogue and Prices.

GABRIEL HORN MFG. CO. CLEVELAND

Don't be Shocked.

Only $30.00.

Foster Shock Absorbers



insure the Automobilists absolute comfort and safety—at the highest speed, on the rockiest road.

Our Shock Absorbers retard all motion going Up not going Up and Down. The Automobile has springs for the purpose of retarding the motion going down.

They are economical, simple, compact, substantial, weighing only 2 1-2 lbs., adjustable in every direction and can be placed on any machine manufactured.

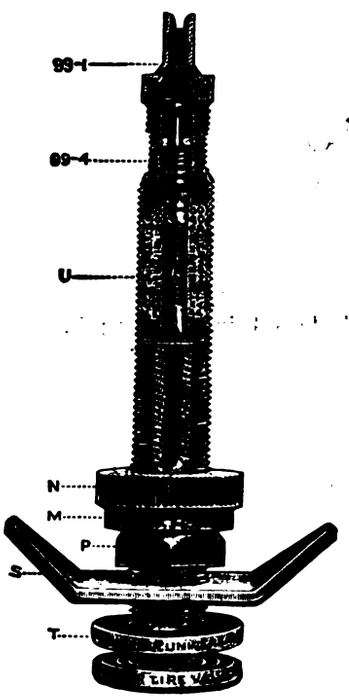
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GABRIEL HORN MANUFACTURING COMPANY, - - 981 Hamilton Street, Cleveland, O.

New York Representative, 148 West 56th Street.

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895.



Simple and Absolutely Air Tight

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires, Hartford Dunlop Clincher Motor Tires, Fisk Detachable Motor Tires, and New Goodyear Detachable Motor Tires; our No. 777 Motor Tire Valve being the standard for 2 1-2 inch and 3 inch tires and our No. 725 Motor Tire Valve being the standard for tires larger than 3 inches.

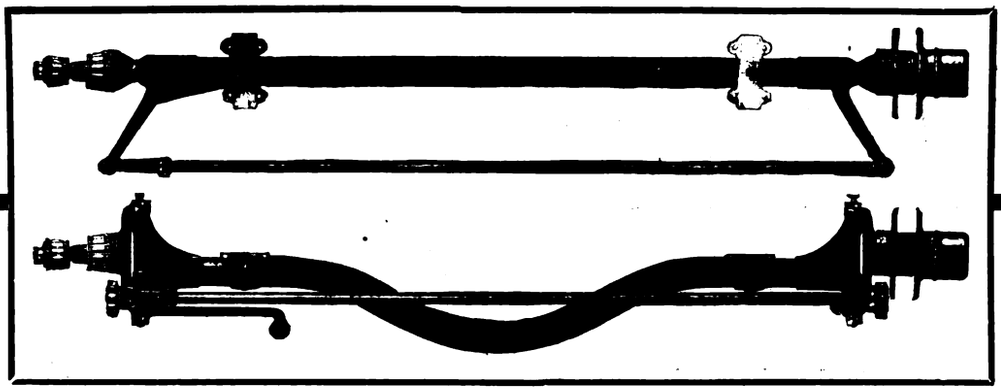
SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

Manufactured by

A. SCHRADER'S SONS, Inc.

28-30-32 Rose Street, New York.

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TIMKEN PRODUCTS

ARE STANDARD.

HERE'S THE PROOF:

America's Best Automobile Builders Using Timken Roller Bearings and Axles on 1906 Cars.

WINTON MOTOR CARRIAGE CO., Cleveland, Ohio.
PACKARD MOTOR CAR CO., Detroit, Mich.
POPE MFG. CO., Hartford, Conn.
POPE MFG. CO., Indianapolis, Ind.
ELECTRIC VEHICLE CO., Hartford, Conn.
ROYAL MOTOR CAR CO., Cleveland, Ohio.
H. H. FRANKLIN MFG. CO., Syracuse, N. Y.
KNOX AUTOMOBILE CO., Springfield, Mass.
KNOX MOTOR TRUCK CO., Springfield, Mass.
OLDS MOTOR WORKS, Lansing, Mich.
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NORTHERN MFG. CO., Detroit, Mich.
DAYTON MOTOR CAR CO., Dayton, Ohio.
BUCKEYE MFG. CO., Anderson, Ind.
ST. LOUIS MOTOR CAR CO., Peoria, Ill.
OSCAR LEAR AUTOMOBILE CO., Columbus, Ohio.
BUICK MOTOR CO., Flint, Mich.
NORDYKE & MARMON CO., Indianapolis, Ind.
ACME MOTOR CAR CO., Reading, Pa.

DORRIS MOTOR CAR CO., St. Louis Mo.
MATHESON MOTOR CAR CO., Wilkesbarre, Pa.
AUSTIN AUTOMOBILE CO., Grand Rapids, Mich.
THE BARTHOLOMEW CO., Peoria, Ill.
MICHIGAN AUTO CO., Kalamazoo, Mich.
HEWITT MOTOR CO., New York City.
NAPIER MOTOR CO., Jamaica Plains, Mass.
AUTO VEHICLE CO., Los Angeles, Cal.
RAPID MOTOR VEHICLE CO., Pontiac, Mich.
MACK BROS. MOTOR CAR CO., Allentown, Pa.
N. Y. TRANSPORTATION CO., New York City.
ELLWELL-PARKER CO., Cleveland, Ohio.
BERKSHIRE AUTO CO., Pittsfield, Mass.
SMITH AUTO CO., Topeka, Kan.
THE ADAMS CO., Dubuque, Iowa.
LOUIS S. ROSS, Newtonville, Mass.
GAETH AUTOMOBILE WORKS, Cleveland, Ohio.
DOLSON AUTOMOBILE CO., Charlotte, Mich.
HOLSMAN AUTOMOBILE CO., Chicago, Ill.
THE ADAMS MFG. CO., LTD., London, England.

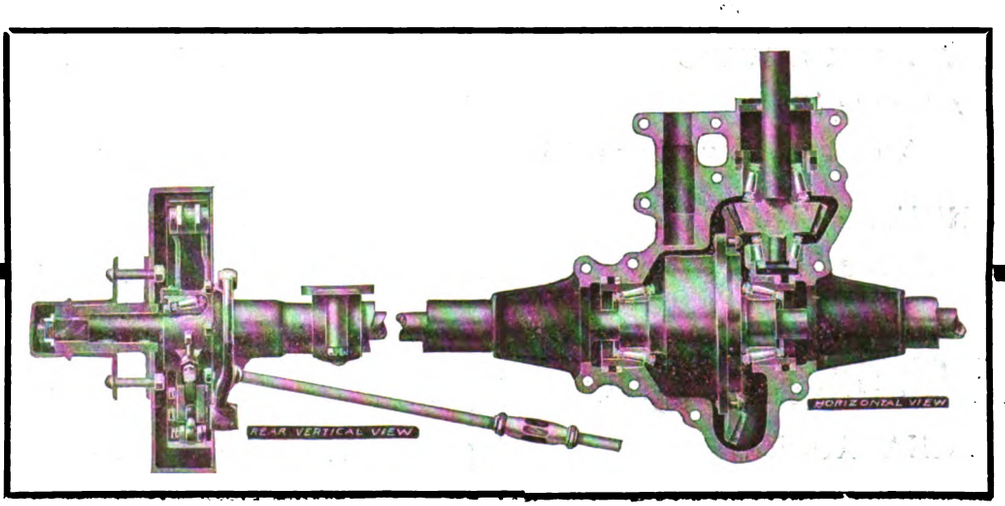
We make every type of front and rear axles for every kind of work, and many ranging from the heaviest of trucks to the lightest runabouts.

Roller Bearings, Steering Knuckles, Wheels and Channel Rims.

Eastern Branch:
219 West 46th Street,
New York City.

TIMKEN ROLLER BEARING AXLE CO.

Works and General Office, CANTON, O.



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DIAMOND CHAINS



The structural variations in automobile chains are much more striking and important than is commonly supposed. The indispensable elements in the manufacture of a high-class chain are first-class materials and workmanship. It is easier to pretend that these elements have been combined than it is to prove it.

No chain factory uses as good stock as ours. "Diamond" rivets are made from nickel steel—that's their distinguishing characteristic. Their tensile and shearing strength is from 50 to 100 per cent. higher than in the case of rivets made from inferior stock. "Diamond" side links are also made from special analysis carbon stock, and all holes are reamed to size and pitch—exclusive advantages we boast for our product. We test every pound of stock before it passes from our warehouse to our factory.

Good workmanship is not associated with poor factory equipment. The physical condition of our plant is unrivaled—in fact, it is not even approached. Making nothing but chains, we are necessarily specialists in every branch of such manufacture. The degree of attention we pay to our business is shown in the many little refinements of practice which are to be observed only in our establishment. This attention to details may not serve to explain the superiority of "Diamond" chains, but it is certainly very suggestive of it.

"Diamond" chains fit any standard sprocket. They are unrivalled for accuracy of manufacture, strength and durability.

NEW YORK SHOWS

Garden Show, Space 196

Armory Show, Space 10

CHICAGO SHOW

Space 182

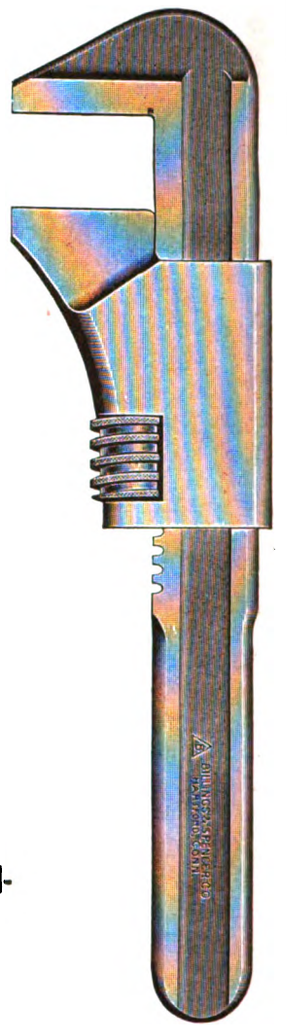
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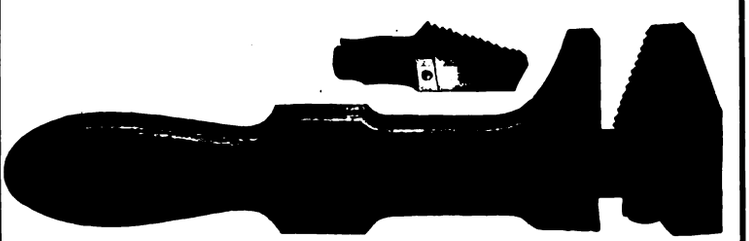
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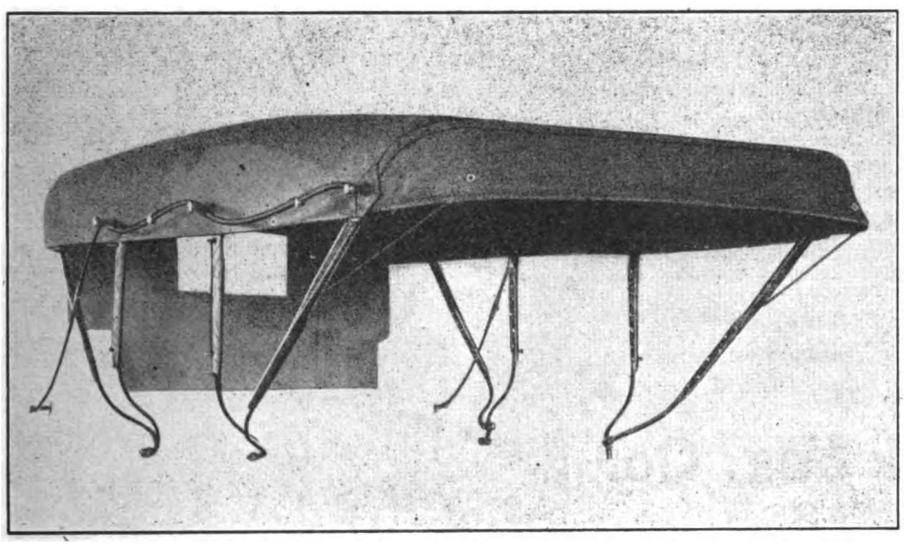
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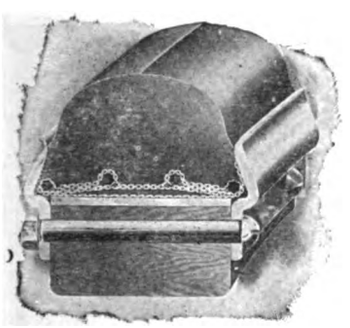
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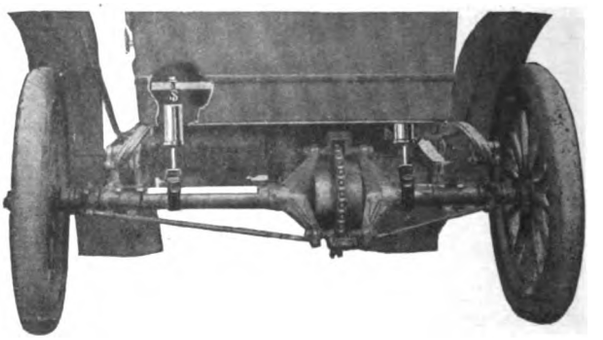
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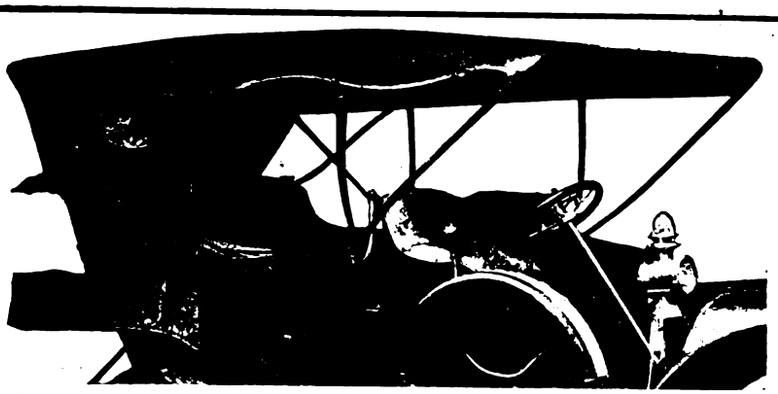
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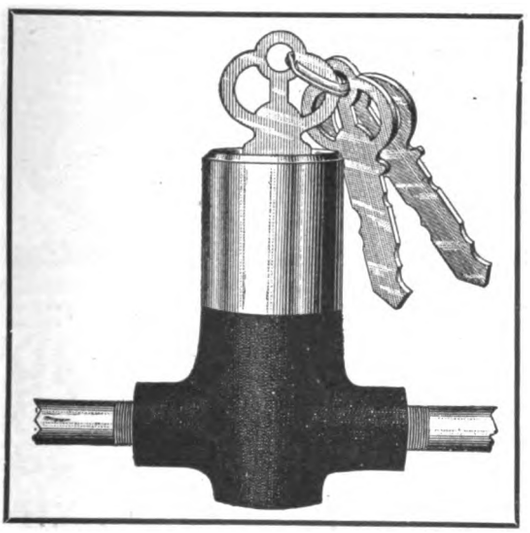
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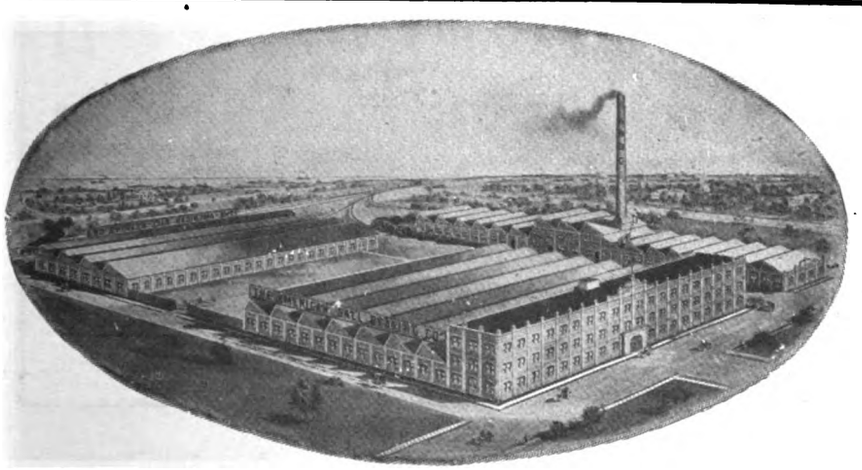
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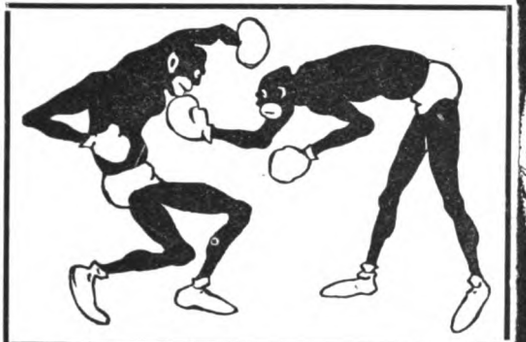
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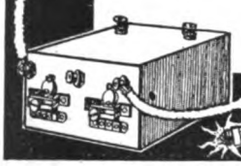
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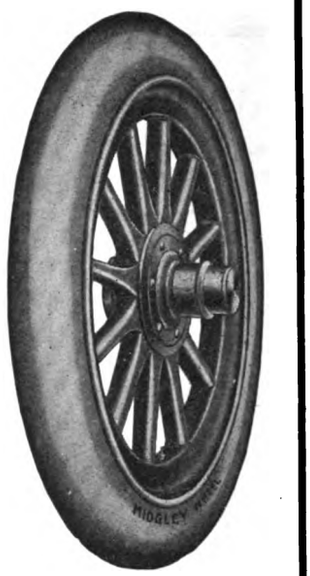
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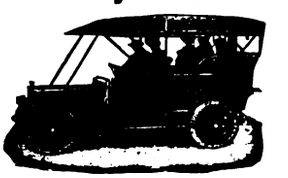
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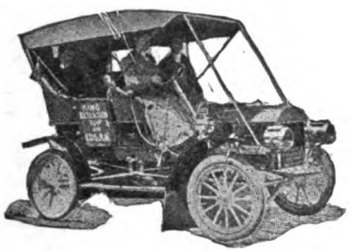
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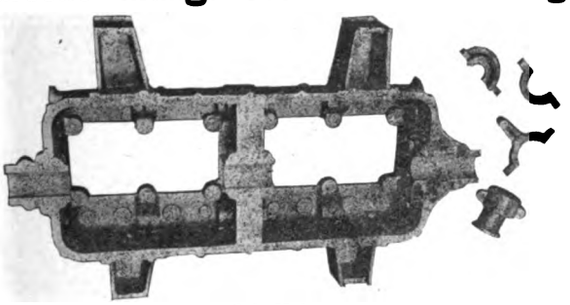


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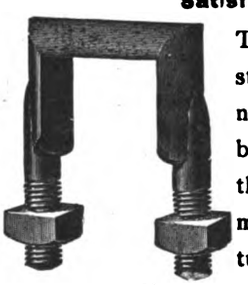
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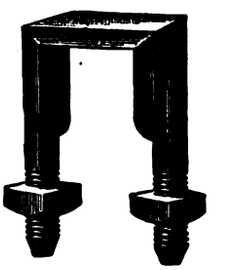
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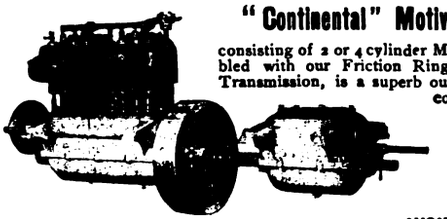
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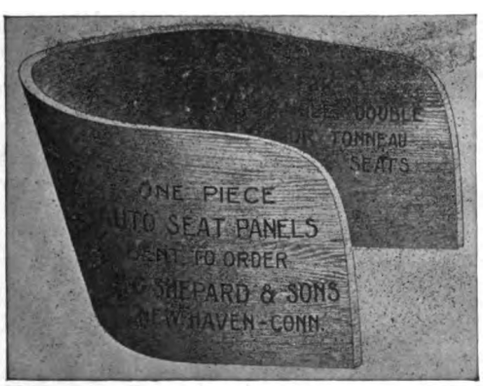
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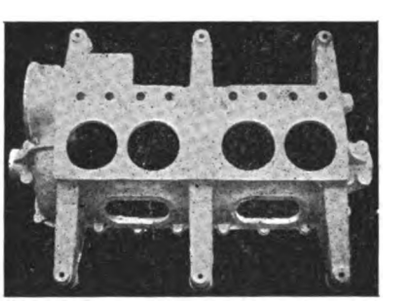
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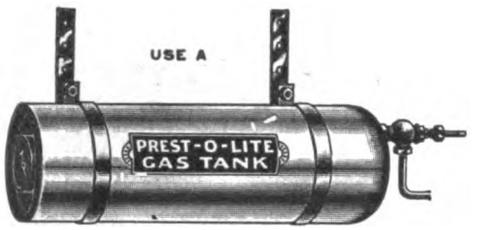
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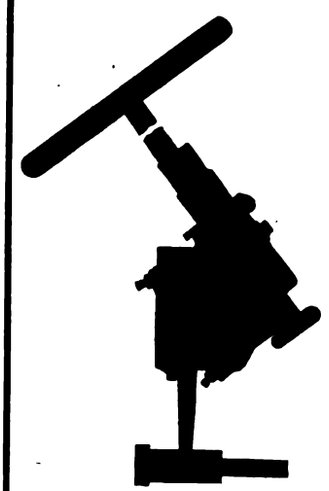
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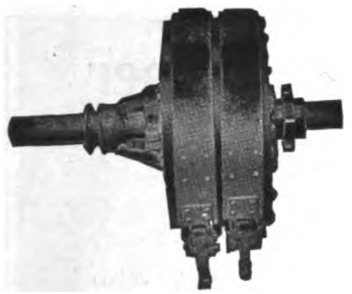
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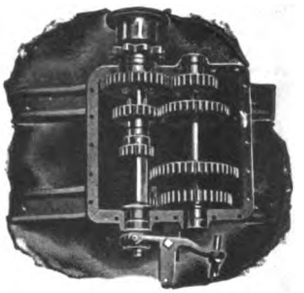
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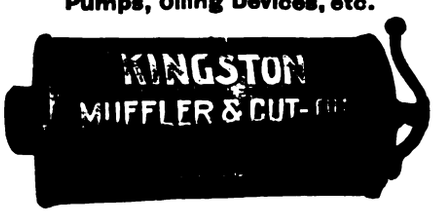
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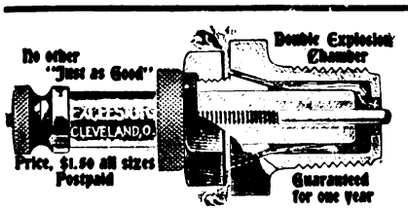
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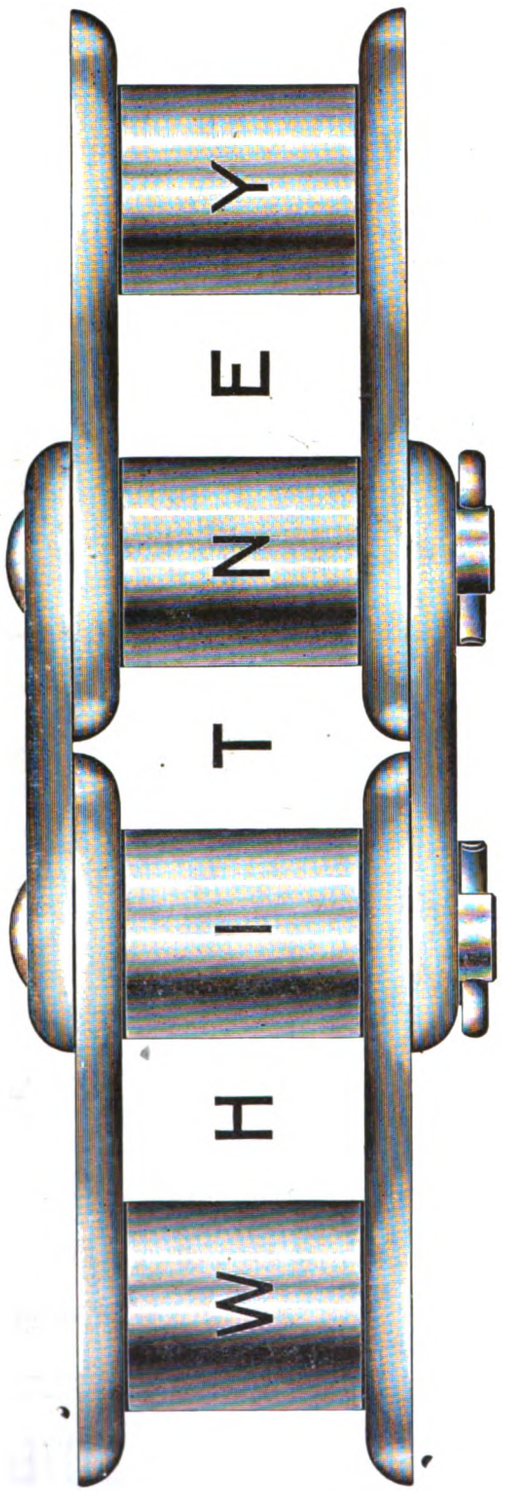
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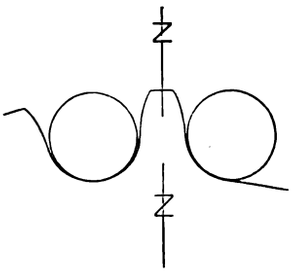
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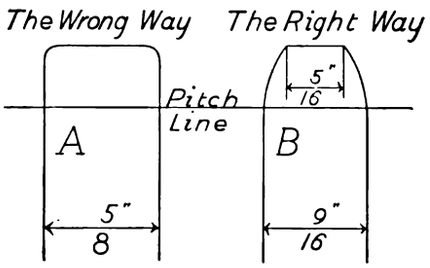
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At the Automobile Shows notice the great number of cars equipped with "Whitney" Chains.

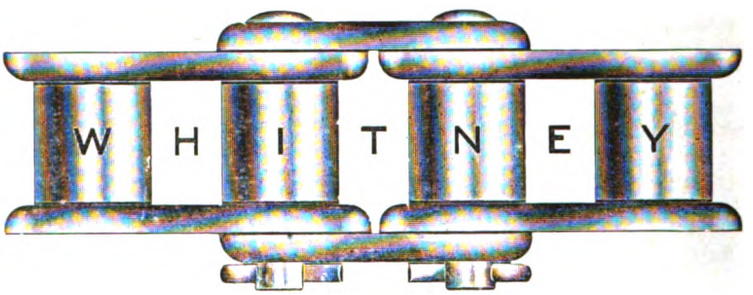


DETACHABLE TYPE—PATENTED.





SECTION OF SPROCKET TEETH THROUGH LINE Z-Z.
B—Shows Correct Section for "WHITNEY" Chain No. 7.



CHAIN No. 7. FULL SIZE.

Thousands of Chains have been damaged by interferences and unfavorable conditions.

In designing your car se'ect the chain you consider right and leave plenty of space for a wider and larger chain.

Are your Sprockets cut to the correct bottom diameter with cutters correct in form?

Are your Sprocket teeth too wide and too straight on the sides?

Have the sharp corners of your sprocket teeth been removed after cutting?

Are your sprockets in line?

As a manufacturer do you inspect every sprocket by comparing it with a correct model or do you accept anything so long as it has the right number of teeth?

THE WHITNEY MFG. CO., Hartford, Conn.

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A CANDID TALK WITH YOU.

We have been laying awake nights a good deal of late trying to figure out where the profit comes in to *you* because a certain tire was (said to) run some fifty thousand miles with no punctures or accidents or any apparent wear, unless the tires *used by you* will do somewhere near as well.

In other words, it strikes us as being pretty slim consolation to know that tires of the same brand you are using have at some time or other made good to *somebody*.

We have been simple enough to believe that *you* were *specially* concerned in the tires used by *you*. But of course human nature varies, and we *may* be wrong.

However, in the manufacture of

MORGAN & WRIGHT TIRES

every tire is made just as good as we know how to make it. You are bound to get our *best-made* tire if you get *any*.

And because or this every-tire-a-good-tire method, the automobilist who *begins* using Morgan & Wright tires *continues* to use them because they make good *to him*.



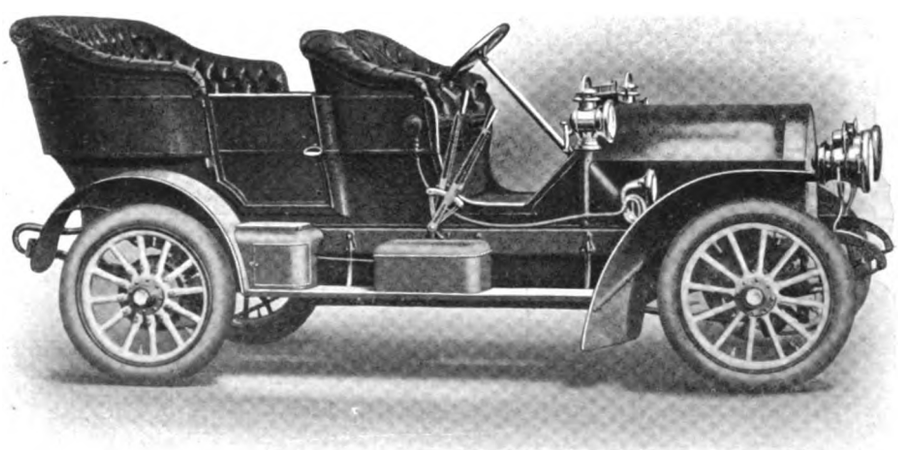
MORGAN & WRIGHT,
CHICAGO.

NEW YORK (Uptown)—214 W. 47th St.
NEW YORK (Downtown)—17 Warren St.
PHILADELPHIA—Cor. Broad and Vine Sts.
DAYTON—417 E. 5th St.
MINNEAPOLIS—717-719 Hennepin Ave.
DENVER—562 Broadway.
BOSTON—228 Columbus Ave.
DETROIT—265 Jefferson Ave.
ATLANTA—85 Edgewood Ave.
ST. LOUIS—588 Vandeventer Ave.
CLEVELAND—347 Huron St.
SYRACUSE—212-214 S. Clinton St.
SAN FRANCISCO—1067 Mission St.
LOS ANGELES—940 S. Main St.



KNOX Waterless 1906 4-Cylinder Car

35-40 H. P.



Price $4000

This Automobile differs from the other Automobiles in a number of particulars, clearly discernible at a glance to those at all familiar with Automobiles. The general Knox outlines disclose a distinctive STYLE, which so well pleased the connoisseur, and is found in the product of no other manufacturer. These air-cooled Automobiles are exceptionally commodious, unusually durable and economical, and maintain their power and speed under all conditions of weather and roads.

WRITE FOR PLEASURE AND COMMERCIAL CATALOGUES.

KNOX AUTOMOBILE CO. - - - Springfield, Mass.

Members A. L. A. M.

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TO SELLERS AND USERS

OF

CLINCHER TIRES

We have commenced and are vigorously prosecuting suits for infringement of our patents against the Pennsylvania Rubber Company and the Michelin Tire American Agency, Inc., on account of the sale of Clincher tires.

The sellers and users of infringing tires are equally liable with the manufacturers of such tires. Whatever rights we may have under our patents will be rigorously enforced. To escape liability purchases should be made from one of the following named manufacturers, who are licensed to manufacture or sell under the G & J Patents:

G & J Tire Co.
Hartford Rubber Works Co.
Morgan & Wright.
B. F. Goodrich Co.
Diamond Rubber Co.
Goodyear Tire & Rubber Co.
Fisk Rubber Co.
International Automobile & Vehicle Tire Co.
Continental Caoutchouc Co.

G & J TIRE CO.

Indianapolis, Ind.

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The Rapid Motor Commercial Vehicles

We Deliver the Goods.

Our entire organization has from the very first been devoted exclusively to the building of Commercial Vehicles.

The success of rapid motor wagons is due to the fact that they are built with the idea of giving heavy continuous service and carrying heavy loads.

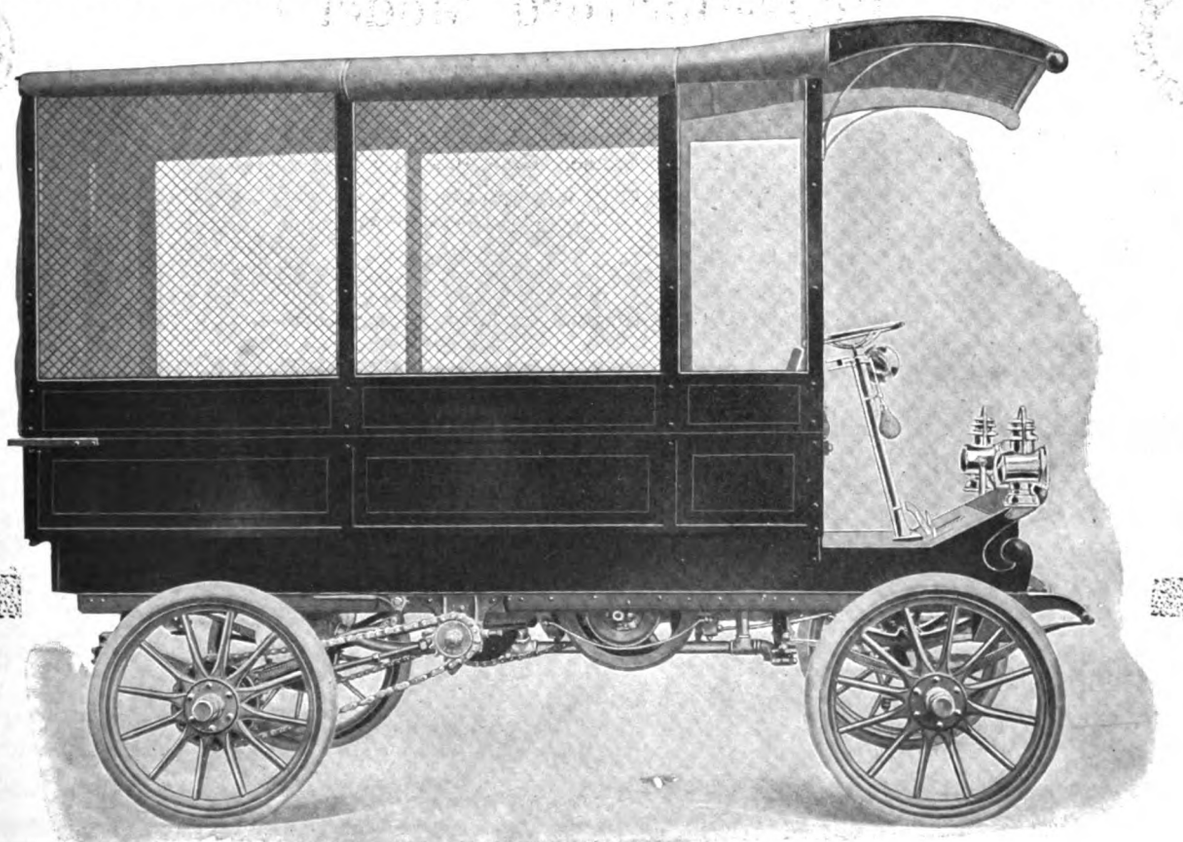
The wagon illustrated weighs 2230 lbs. and carries 3000 lbs. easily. Rear wheel measures 34 inches; front wheel 32 inches; solid tires. The double side chain drive insures a maximum of power delivered tc the 2-inch solid steel axles. The cut illustrates only one of our many bodies. Size and style of body furnished to meet your requirements.

One Ton, $1,400; 1 1-2 Ton, $1,800.
GUARANTEED FOR ONE YEAR.

Agents can secure territory by writing me now, before all choice allotments are gone. Our new factory is a guarantee of prompt delivery.

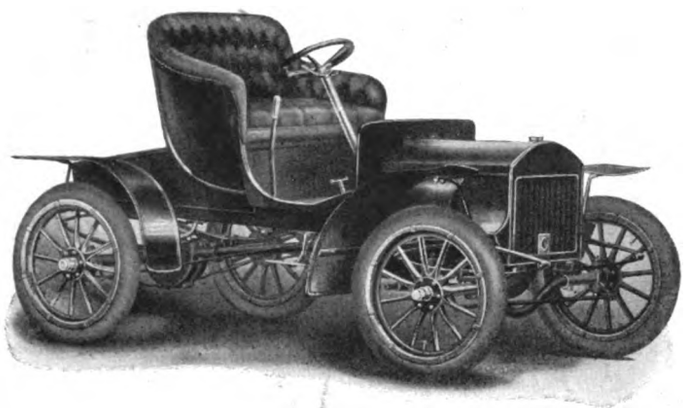
Address F. R. HENRY, Sales Manager,

RAPID MOTOR VEHICLE CO., Pontiac, Mich.



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Wayne



Model H, here shown, is our 2 passenger runabout. Motor 2 cylinder opposed, under hood. Cylinders 4½x4 developing 14 H. P. Planetary gear transmission with DIRECT BEVEL GEAR DRIVE. The strong features of this car are extreme simplicity and accessibility. The crank case and transmission case form one casting, and the entire engine can be taken apart or assembled in half an hour. Price, **$800.00.**

Model F, 4 cylinder car, cylinders 5½x5, 50 H. P., seating 7 people. Price, **$3,500.**

Model K, 4 cylinder, 5 passenger touring car. 35 H. P. Sliding gear transmission. Price, **$2,500.**

Model B, 4 cylinder, 5 passenger car, 24-28 H. P. Sliding gear transmission. Price, **$2,000.**

Model C, 5 passenger car. Double opposed motor, 20 H. P. Planetary transmission. Price, **$1,250.**

With the Wayne Models for 1906, almost every demand for a high grade car can be successfully supplied.

See us at Chicago Show or write for

WAYNE AUTOMOBILE CO., - Detroit, Mich.

Member American Motor Car Manufacturers Association.

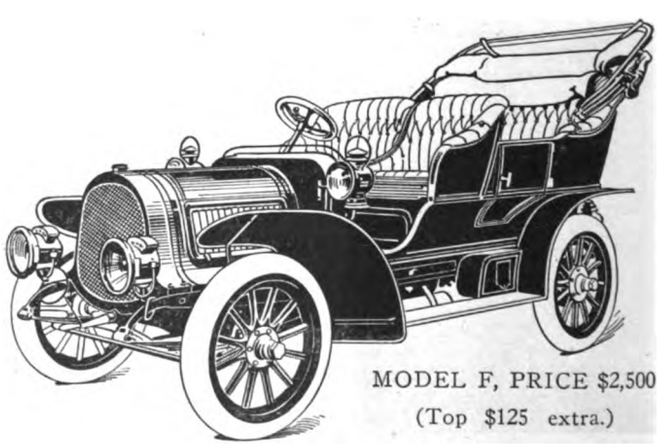
Pope-Hartford Model F

is the result of our 28 years of experience in making and marketing mechanical vehicles, and is the latest product of our famous Hartford factories. **MOTOR** consists of 4-cylinder, vertical, water-cooled engine with cylinders cast in pairs; all gears encased, brake test 28-30 **H. P.** **TRANSMISSION:** sliding gear, 3 speeds forward and reverse. **CARBURETOR:** specially designed, insuring economy in fuel consumption and maximum power. **CONTROL:** throttle and ignition levers on single sector that does not revolve with wheel. **DRIVE:** bevel gear through propeller shaft to the rear axle. **TONNEAU:** non-removable, dust-proof, double side entrance. **DESIGN:** artistic in conception and execution.

While great attention has been given the essentials of construction it will be found that no detail has been overlooked. Everything that will contribute to the user's comfort and convenience has been embodied in this up-to-date car. (Extension top $125 extra. **PRICE $2500.**

Pope-Hartford Model G

is our 2-cylinder, opposed, 18 **H. P.** touring car. The engine is under the hood and all parts are accessible for inspection and repair. This is our dependable 2-cylinder machine of last year, with such minor changes as have been suggested by a season's use. **PRICE $1600.**



MODEL F, PRICE $2,500
(Top $125 extra.)

POPE MANUFACTURING CO.

HARTFORD, CONN.

New York City, 1733 Broadway
San Francisco, 451 Mission Street
Boston, 223 Columbus Avenue
Washington, 819 14th St., N. W.

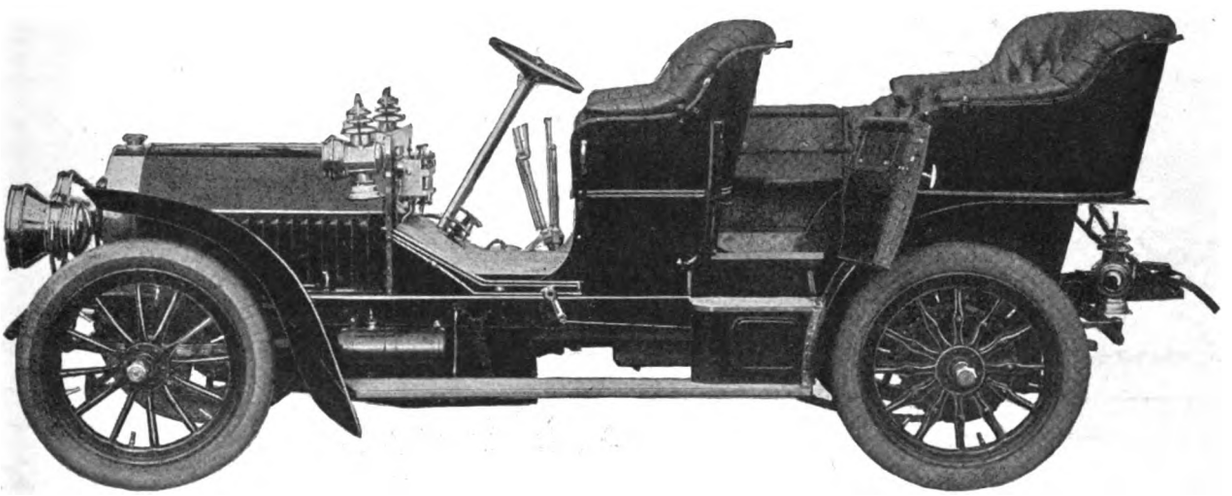
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Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA."

15-20 H. P., $3,000. **30-35 H. P., $5,000.**

Both with complete touring equipment.



TYPE H. LOCOMOBILE 30-35 H. P. $5,000.
Top and Luggage Carrier extra.

"It was hardly to be expected that the 1906 product of the Locomobile Company of America, manufacturing in Bridgeport, Conn., would incorporate any very marked departures from previous practice. To have done so would have been somewhat in the nature of gilding refined gold. By the early adoption and subsequent perfection of such advanced constructional features as four cylinder vertical motors, enclosed timing gears, automatic carburation, sliding gear transmission, yielding a direct drive on the highest speed, and solidly forged axles, it produced a car that was a credit to the makers and to those who used it. This being the case, the designers have been at liberty to confine their attention to the improvement of the minor details from year to year, the absence of distinctly radical changes in the make-up of the machine allowing opportunity for a process of evolution and elimination in the lesser parts which has worked out a most excellent result."

(From a recent issue of THE MOTOR WORLD.)

For 12c in stamps we will mail 12 souvenir postal cards showing various views ot the LOCOMOBILE in the Vanderbilt Cup Race, making the best showing of any American car in any international contest. For 10c in stamps we will mail a five-color poster showing the LOCOMOBILE finishing the race. Printed matter of 1906 cars on application.

The *Locomobile* Company of America, Bridgeport, Conn.

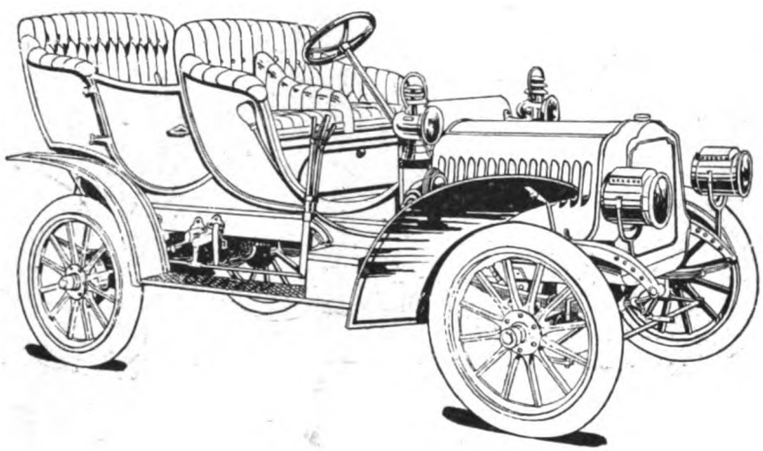
NEW YORK, Broadway and 76th St.
PHILADELPHIA, 249 N. Broad St.

Member Association of Licensed Automobile Manufacturers

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

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QUEEN AUTOMOBILES FOR 1906



3 MODELS ALL WINNERS

4 Cylinders, 26-28 H. P. Price, $2,000.

SPECIFICATIONS

DRIVE	Shaft, bevel gear.	**FRONT AXLE**	Solid-Forged.
FRAME	Pressed Steel.	**GROUND PARTS**	All cylinders, pistons, piston rings, crank shafts, valves, universal couplings and transmission shafts.
WHEELS	32 x 4.		
WHEEL BASE	101 inches.		
TRANSMISSION	Sliding gear.	**EQUIPMENT**	Five lamps, horn, tools and storage battery.

We also have an 18 h. p. two cylinder car with detachable side door tonneau list a $1100.00, and a runabout 12 h. p. at $800.00.

Write us for complete details and agency proposition; it's so interesting that our factory is already a bee-hive of industry. Better get in line now.

C. H. BLOMSTROM MOTOR CO

DETROIT, MICH.

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The Waltham-Orient is an Air-Cooled Car.

And the advantages of air-cooling in cars of certain power-rating are manifold, each advantage being a conclusive argument in itself.

1. There is a great reduction in weight, owing to the absence of radiator, water-jackets, pumps and plumbing, and of the water supply itself.
2. This permits lighter proportionate construction throughout, and does not require such large tires, which are more expensive to renew.
3. It reduces wear on the motor and all bearings, cuts down the expense of repairs, replacements and tire bills.
4. It eliminates completely the complicated mechanism of water radiation with its constant tendency to leak.
5. It increases power and speed of the same comparative horse-power proportionate to the decrease in weight.
6. The weight reduction increases the elasticity and responsiveness of the car.
7. Its extreme simplicity and accessibility make it possible for each owner to adjust and tune his own car without assistance from an expert but expensive repairer.
8. A woman can drive it with ease because of the absence of confusing complications of control.
9. It will run 365 days in the year. It matters not if the thermometer registers 40 degrees below zero; there is nothing to freeze.
10. It is equally immaterial if the temperature is one hundred in the shade—the Waltham-Orient system of radiation, assisted by a powerful fan, keeps a uniformly cool engine, entirely free from over-heating or pre-ignition. When it is considered that the explosion in the cylinders equals 1600 degrees Fahrenheit, it is apparent that the ordinary range of external temperature is not an important factor.

Our catalogue will be sent free upon request, and will tell the entire Waltham-Orient story. We are always ready for good live agents in unassigned territory. Write for proposition.

WALTHAM MANUFACTURING COMPANY,

General Offices and Factory, WALTHAM, MASSACHUSETTS

Members of the Association of Licensed Automobile Manufacturers.

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OLDSMOBILE



Palace Touring Car, Model S. Price, $2,250.

With complete lamp and horn equipment.

From Boulogne to Paris—202 miles in 7 hours is going some. That's the record made during the recent Paris show by Dwight Huss, of Oldsmobile Transcontinental race fame, and F. K. Folberth, driving the first Oldsmobile Four-cylinder Palace Touring Car sent abroad. This particular car was one of the first of the new models turned out by the factory, and was equipped with a motor developing barely 24 h. p.—the same model as now built is equipped with motor developing fully 28 h. p. In making the run good French roads helped—but 7 hours is as fast time as that particular course is ever run by the most powerful European cars.

That's pretty strong testimony on the subject of Model S Speed. We can give you equally convincing testimony on its Style and Stability. Send today for Model S booklet. It's good reading.

OLDS MOTOR WORKS, Lansing. Mich., U. S. A.

Member A. L. A. M.

Canadian trade supplied from Canadian Factory, PACKARD ELECTRIC COMPANY, St. Catherines, Ontario.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
K9 Model L.... Traffic Cars....

Name _____

Address _____

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs.

Name _____

Address _____

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. K9

Name _____

Address _____

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MORE

Diamond

SIDE WIRE SOLID TIRES

on Commercial Cars exhibited at the Two New York Shows than of any other half dozen makes combined.

Diamond total, 28 sets; nearest competitor, 15 sets.

But the ultimate Test is service. There is where Diamond excels.

THE DIAMOND RUBBER COMPANY,

AKRON, OHIO.

NEW YORK—78 Reade St.
BOSTON—174 Columbus Ave.
PHILADELPHIA—804-806 N. Broad St.
BUFFALO—715 Main St.
DETROIT—158 Jefferson Ave.
ST. LOUIS—3266 Olive St.
CHICAGO—167-169 Lake St.
CLEVELAND—823 Huron St.
SAN FRANCISCO—608 Mission St.
DENVER—323 Boston Building.
MINNEAPOLIS—611 First Ave. S.
ATLANTA—94 North Prior St.

NORTHERN

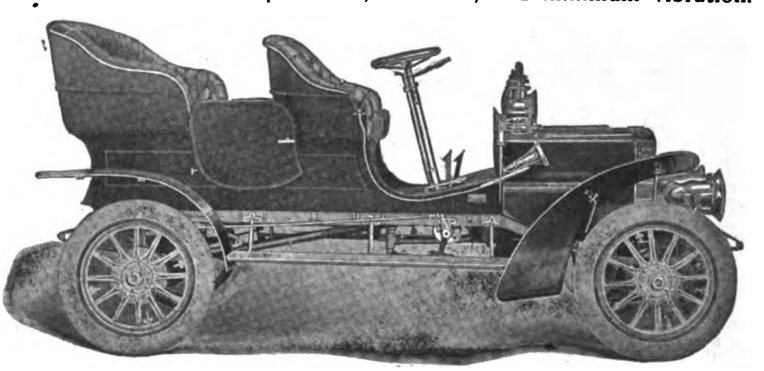
"The Silent, Dustless Car"

The Silent Northern Touring Car fills a place among touring cars all its own. It has all the style, elegance and luxuriousness of the highest priced four-cylinder car, combined with a mechanism which for simplicity, compactness, and ease of control is absolutely unrivalled by any car at any price. All changes made from steering column and conveniently placed pedals. No side levers, no belts, no chains, gaskets, truss rods or strut rods. No complications, no noise, and minimum vibration.

1906 Medels

To be exhibited at Chicago, Feb. 3d to 10th

Sturdy Northern Runabout, 7 h. p,, with oil lamp equipment,	$650
Silent Northern Touring Car, 20 h. p., double opposed motor, with gas and oil lamp equipment,	1800
Silent Northern Limousine, 20 h. p., with gas and oil lamp equipment,	2800
Model K, 30 h. p , four-cylinder car, **air controlled,** and **air brakes,** with gas and oil lamp equipment,	3000



Double opposed motor Five passengers. Tire, 30x4, fully equipped. $1,800. F. o. b., Detroit.

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Member Association of Licensed Automobile Manufacturers.

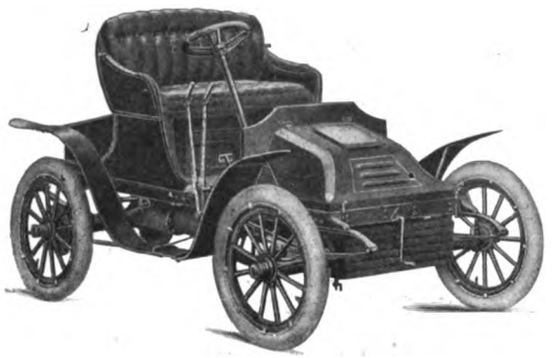
New York City Agent: PETER FOGARTY, 142 West 38th Street.

Chicago Agent: NORTHERN MOTOR CAR COMPANY, 1449 Michigan Avenue.

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The Autocar

Type X, $1000. 12 Horse Power.



Standardized

The superiority of The Autocar Runabout is established by its performance of past seasons. In power, in speed, in strength, in safety, in control,—in all of the qualities whose sum is *reliability*, it has far surpassed its class. And no other two-passenger car rides so smoothly, runs so quietly; it is so free from road-difficulties, so accessible, and so easy to care for.

Its position of leadership is made unassailable by an increase of power in the 1906 model, and adoption of the characteristic Autocar Control—right-hand wheel-steer with spark, and throttle-control grips in rim of wheel.

The Autocar (Type X) Runabout is the highest development in accessibility control and reliability—and is distinguished as the only motor-car in the world which is standardized throughout.

AXLES.—Front axle, seamless tubing. Rear live axle, steel; ground bearings. Squared end drive, no wheel keys necessary. Dust-proof case.
BRAKES.—Band hub brakes on each wheel operated by foot pedal; and brake on driving shaft, operated by side lever.
CONTROL.—Right-hand wheel steer, with bevel gear and sector. Spark and throttle control grips in rim of wheel (a new feature on this car). Foot operated clutch, controlled by the left foot. Caster knuckles.
COOLING.—Centrifugal water pump, gear driven. Coil radiator in front under the frame.
IGNITION.—Two batteries of three dry cells each. Rotary spark timer; double spark coil; jump spark plugs.
LUBRICATION.—A few parts only are oiled directly, such as steering knuckles, steering post and gears. Motor oiled by mechanical (gear-driven) oiler and splash. Transmission and rear construction run in dust-proof cases in bath of oil, the splash from the gears lubricating all bearings and gears.
MOTOR.—Water cooled. Two balanced, horizontal-opposed cylinders, in front under the hood. Four-inch bore, four-inch stroke. Mechanical exhaust and automatic inlet valves. Drop-forged steel connecting rods. Drop-forged steel crank shaft; oil tempered. Bronze bearings; all bearings ground to size.
REAR DRIVE.—Two hardened-steel bevel gears and bevel-gear differential. Driving shaft ball bearing. Axles, Hyatt roller bearings, with ample ball thrust bearings.
TIRES.—Fisk "Heavy-Car" type, 28-inch by 3-inch.
TRANSMISSION.—Well known sliding gear, or French type. Drop-forged, hardened-steel gears. Shafts run on ball bearings. Splash lubrication. Three forward speeds and reverse.
TREAD AND WHEEL BASE.—Fifty-four-inch tread. Seventy-six-inch wheel base.
VAPORIZER.—Holley vaporizer. Autocar type, in front of motor.
WHEELS.—Twelve spoke Midgley all-steel artillery wheels; reinforced construction. Roller bearings.

THE AUTOCAR TOURING TYPE XII. $2600
Double side entrance. Five passengers, 24 h. p. 4-cylinder vertical motor. Shaft drive. Sliding gear transmission. Three speeds and reverse.
Write for complete description.

The Autocar Co., Ardmore, Pa.

Member Association of Licensed Automobile Manufacturers.

Reliability



G & J Tires

for the

Season of 1906.

One Cure Wrapped Tires.
Vulcanized in Open Steam.
Strong and Tough.
Most Durable.
Highly Resilient.

The best tire made for automobile use.

Write us.

G & J Tire Co.

Indianapolis.

Depots:

Chicago Buffalo Detroit Cleveland
Boston Denver San Francisco Philadelphia

Distributing Agencies:

Minneapolis, Plant Bros Portland, Keats & Co.
Los Angeles, Ramsay-Hutchins Rubber Co.

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National

RELIABILITY

was demonstrated in the most convincing manner at Indianapolis, on November 16th-17th, 1905, when a **National Stock Car** made 1094 3-16 miles in 24 hours, breaking the World's Record by **78 9-16 Miles.**

At the CHICAGO SHOW



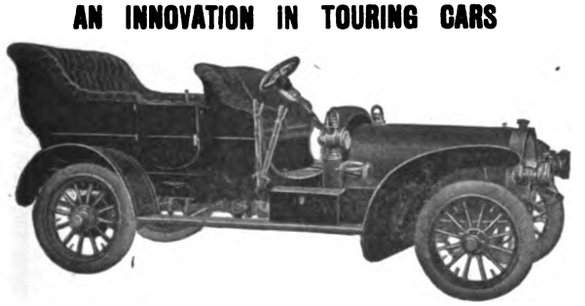
Coliseum Spaces 76-77-78 Feb. 3d to 10th

THE CAR THAT BROKE THE WORLD'S RECORDS



National, **Model D, 4 cyl.,** 35-40 H. P. Price $3,000.

AN INNOVATION IN TOURING CARS



National, **Model E, 6 cyl.,** 50-60 H. P. Price $4,000.

Stylish, powerful, smooth running, easily controlled. Aluminum body, seats seven passengers comfortably, ***all facing forward.***

WRITE FOR PARTICULARS

NATIONAL MOTOR VEHICLE COMPANY

1007 E. 22d STREET, - INDIANAPOLIS, IND.

DISTRIBUTORS

Linscott Motor Co.....162 Columbus Ave., Boston, Mass.
Homan & Schuls Co.....38th St. & Broadway, New York, N. Y.
Ralph Temple Auto Co.....311 Mich. Ave., Chicago, Ill.
Liberty Auto Co.....138 Beatty St., Pittsburg, Pa.
Tioga Auto Co.....Broad and Tioga Sts., Philadelphia, Pa.
Colonial Auto Co.....3944 Olive St., St. Louis, Mo.
The Fisher Auto Co.....330 N. Illinois St., Indianapolis, Ind.

Member American Motor Car Manufacturers' Association, Chicago.

The Incomparable

WHITE

The Car for Service.



EXPERT COMMENT

ON THE

EXHIBIT OF WHITES

AT THE

NEW YORK SHOW

"No use to declare anything bad or good about these great car builders. They stand everywhere high above critics, and I simply will say that I should like to own one of their splendid 18 H. P. touring cars at $2,800. "The generator, with its eleven helical coils of tubing, is certainly the smallest and most perfect apparatus of that kind known up to now and the fact of obtaining 'all speed' with a single lever is not the least point that has recently converted hundreds of sportsmen to steam automobling"—*George Dupuy, of L'Auto, Paris, in New York American.*

"The engine, the generator and the transmission mechanism are identical with those in the 1905 model, these features having been brought to a high state of perfection."—*New York Herald.*

"The old reliable White steamer, now entering its sixth year of service, is shown in eight distinct types. While the makers of gasolene machines are many, and their notions of automobile construction quite as diverse, the White people unaided have developed a steam car which is considered by its friends to be the nearest approach to automobile perfection. Its noiselessness, wonderful control and unique construction, that make it safe and speedy, put the White in a class by itself."—*New York Globe.*

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

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HAYNES A CAR OF STYLE

The body used on Models "O" and "R"—1906 Haynes, was designed by a famous Parisian bodymaker. When the two cars were in New York, Boston and Philadelphia, last fall, they were frequently mistaken for foreign-built machines.

The only two models offered for this year have all the little details that add so much to beauty, convenience and luxury. Nothing is found wanting. The lines are graceful and the finish is as rich as it is possible to produce.

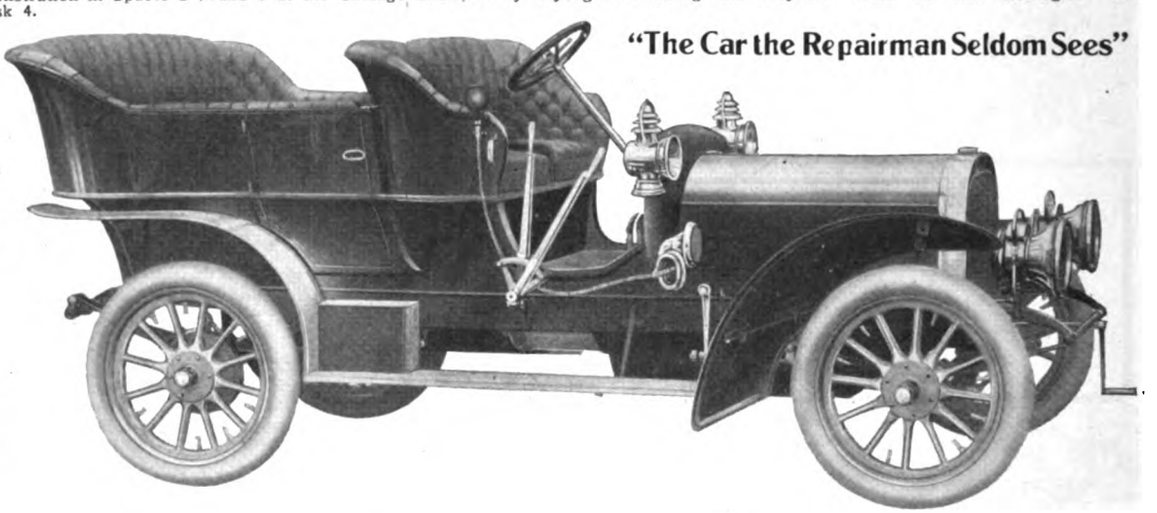
But in addition to being a car of great beauty, it is also a car of great comfort, endurance and reliability. It is as dependable as the old family horse, rarely out of order and always easy to manage.

Haynes care in construction, in selection of materials and finish, is responsible for this and make it the car of small cost for repairs and up-keep. These points can be proved by demonstration in Spaces S 7 and 8 at the Chicago Show, or by any agent handling the Haynes. Send for new catalogue. For prompt attention address Desk 4.

MODEL "R" FOUR CYLINDER TOURING CAR

Vertical roller-bearing engines. Cylinders cast separately, 5⅛ x 6 inches, 50 h. p. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master Clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller-bearings throughout. 108-inch wheel base, 54-inch tonneau, seating five people. Four to 60 miles an hour on high gear. Weight, 2750 pounds. Price, $3,500, f. o. b. Kokomo. Full equipment.

"The Car the Repairman Seldom Sees"



THE HAYNES AUTOMOBILE CO., KOKOMO, INDIANA
Members A. L. A. M.
New York, 1715 Broadway
Chicago, 1421 Michigan Ave.
OLDEST AUTOMOBILE MANUFACTURERS IN AMERICA.

THE "Maxwell"

Perfectly Simple Simply Perfect

The Evolution of the Maxwell Doctrine—Maxwell Cars

The Doctrine:

FIRST—A cylinder of five-inch bore, with five inch stroke is ideal for a double opposed gasoline motor.
SECOND—A double opposed motor, 5 in. x 5 in. when properly made develops about twenty actual horse-power.
THIRD—To use four cylinders for motors of twenty or less horse-power is unnecessary because thereby the number of wearing parts is unnecessarily increased.
FOURTH—Twenty actual horse-power, not momentum or fly-wheel horse-power, is enough for every requirement except excessive speed or extreme fashion. Therefore a two-cylinder, 5 in. x 5 in., double opposed motor is the best, and it is as evenly balanced as four-cylinder construction, is very much less complicated and much more reliable. It would take four 4 in. x 4 in. cylinders to develop the same power as two 5 in. x 5 in. cylinders, properly made.
FIFTH—Four cylinder cars appeal largely to "Fad and Fancy" only; two-cylinder cars produce reliable service.
The unprecedented successful record of the Maxwell cars during the season of 1905 prove the wisdom of the above written doctrine.

Reasons for the Success of the Maxwell

Common Sense was the motive of its construction, not the impulse of "fad and fancy."

A 5 in. x 5 in. horizontal double opposed motor for a touring car and a 4 in. x 4 in. for a tourabout have been proved the ideal types for service and reliability.

Maxwell horse-power is demonstrated by the actual continual test, not by the flash system of testing which includes that resulting from the inertia of the fly-wheel. Therefore, Maxwell horse-power is actual horse-power.

Maxwell Cars are Splendidly Made as Well as Perfectly Designed—Maxwell Features:

Multiple Disc Clutch — Bevel gear Drive — Three-Point Suspension
No Pump — Great Reliability and Economy — Metal Bodies

Maxwell cars are sold under the positive guarantee that as good a car cannot be sold at a lower price.

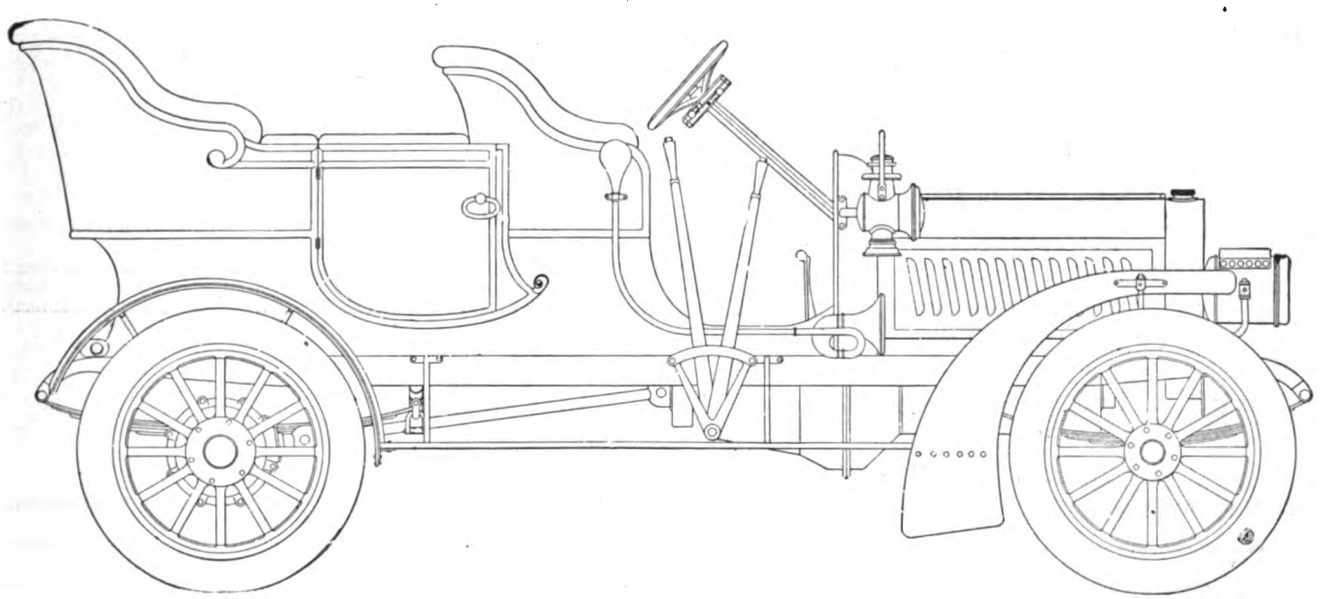
BRANCHES:
Maxwell-Briscoe, Incorporated
New York, N. Y.
Morrison Tyler Motor Company
Boston, Mass.
Fisher Automobile Company
Indianapolis, Ind.

MAXWELL-BRISCOE MOTOR COMPANY
Member American Motor Car Manufacturers' Association.
Main Office: Tarrytown, N. Y.
Chicago Pawtucket

BRANCHES:
Maxwell-Briscoe Chase Company
Chicago, Ill.
Maxwell-Briscoe-McLeod Company
Detroit, Mich.
Richard Irwin & Company
Foreign Representatives

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ST. LOUIS
1906
"RIGS THAT RUN"



TYPE XVI
32-36 ACTUAL H. P.—$2500.

Every AUTOMOBILE, no matter what the PRICE, STYLE or CONSTRUCTION, contains some individuality which, in its builders' estimation places it above its competitors. Every manufacturer strives to have the best, and undoubtedly some one HAS THE BEST, but a fair verdict cannot be rendered by any one man. ONE exclusive feature does not constitute an entire MOTOR CAR no more than one individual constitutes a MILLION DOLLAR ORGANIZATION. An engine may be absolutely perfect, but if the power is not transmitted correctly to the rear wheels the car is a FAILURE, and vice-versa. To build a successful car, the manufacturer must give as much attention to the smallest details as the largest. THE ST. LOUIS MOTOR CAR COMPANY are the Pioneer Automobile Manufacturers of the UNITED STATES. FOURTEEN YEARS of BUILDING EXPERIENCE has taught us CONSIDERABLE. We know the material and style of construction best adapted for AMERICAN roads and CONDITIONS. We know how to manufacture intelligently and economically. WE KNOW that TYPE XVI is equal to any AUTOMOBILE built in America. Our claim is not based upon any ONE exclusive feature. It's "RIGHT" all the way. Compare our specifications with cars listing from $3000.00 up, then make arrangements for demonstration at any of the coming shows. We still have some valuable territory at our disposal and our AGENCY PROPOSITION is just as thorough as our car.

AGENTS who have already contracted for over two-thirds of our '06 product tell us that "TYPE XVI" will be the car of the year. We KNEW this four months back. If you are INTERESTED, it will be a pleasure to tell you WHY.

ENGINE. 32-36 ACTUAL H. P. 4 cylinder water cooled.
IGNITION. Jump spark. Splitdorf coil. Pitsfield timer. Storage battery and dry cells.
TRANSMISSION. Sliding train. Three forward and reverse.
REAR AXLE. Floating type, bevel, Timkem roller bearings throughout.
FRONT AXLE. I section, drop forged, roller bearings.
FRAME. Cold rolled pressed steel, special stock, channel section, full pan in under hood covering entire engine.
WHEEL BASE. 110 inches.
WHEELS. Superior quality; second growth hickory.
TIRES. 32 by 4 inches; optional.
VALVES. Mechanically operated; all interchangeable.
CARBURETTER. Float feed; automatic governor requiring no adjustment.
BRAKES. Transmission, foot and emergency lever, 5 in number.
BODY. Exceptionally roomy; will carry seven people; upholstering, general appearance and workmanship unsurpassed.
EQUIPMENT. Two brass side lights, one tail light, two head lights, full tool equipment, baggage haul, etc.
1906 CATALOG, GIVING FULL DETAILED DESCRIPTION, NOW READY.

ST. LOUIS MOTOR CAR COMPANY, - Peoria, Ill.

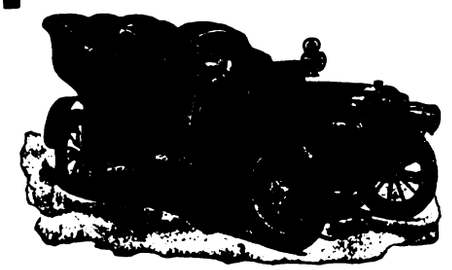
SALES DEP'T: 1229 Michigan Ave,, Chicago, Ill.

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Commander of Strenuous Service.

We do not offer you the 1906 Thomas simply on the strength of its supremacy among American cars. We ask you to consider it upon its ability to out-point in all around excellence and efficiency the finest car made anywhere else in the world.

It will "stand up" under any and all conditions. It is staunch, strong, rugged, powerful and the most beautiful car in the world.



In describing the Thomas Motor, we will only touch on a few of the points which are of vital importance for motor perfection. Cylinders 5½ x 5½ inches and develop 50 h. p. They have forged nickle-steel connecting rods with five large bearings. The cam gears for operating all the valves are of the combination type, with wide face and coarse pitch, thus making them strong and noiseless. There is no satisfaction to the motorist like that of knowing the engine is reliable, and there is even a greater satisfaction in the knowledge that every special feature of the New Thomas is absolutely essential to comfort and happiness.

We have already brought to your attention The Thomas Safety Device, which positively renders accidents from backing an impossibilty.

THE 50 HORSEPOWER THOMAS FLYER

has many new improvements, that are so essential to comfort and satisfaction in motoring, that it is only possible to point out a few of these mechanical advantages at a time. Watch our coming announcements in this magazine, in which will be described in detail:

The most effective metallic three disc clutch in operation. Gears that may be changed between high and low without passing through intermediate gears. Hill climbing—will carry five passengers up a 14% grade at the rate of 40 miles an hour. Practical use of chain drive. New dustless body—dust suction entirely eliminated. A guaranteed speed of from six to 60 miles per hour on the high gear, always running quietly, smoothly and without rock or jar.

In order that you may have a complete understanding of the All-American Car, which at last surpasses the finest foreign product, besides giving you a true and accurate description of many of its special features in this magazine every issue, we want to send you our illustrated catalogue and special Thomas literature.

THE E. R. THOMAS MOTOR CO., - 1416 Niagara Street, Buffalo, N. Y.

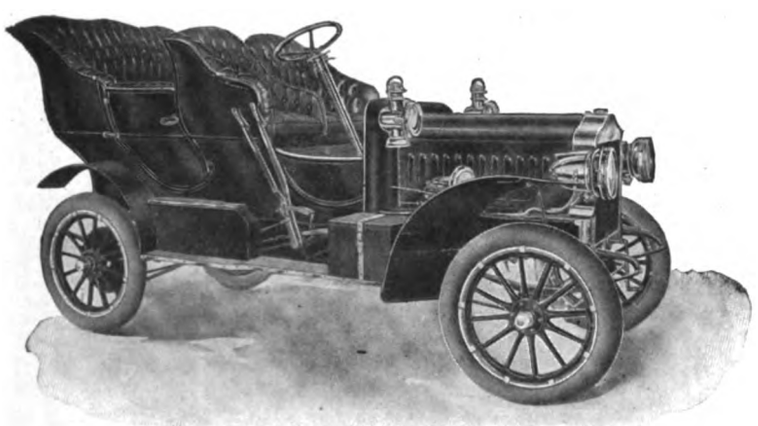
Member Association of Licensed Automobile Manufacturers.

LARGEST MANUFACTURERS OF 50 HORSEPOWER CARS IN THE WORLD.

THE FRICTION DRIVE CAR

THE LAMBERT

GUARANTEED FOR ONE YEAR



Lambert Model 8. Price $3000

THE "SENSATION" AT NEW YORK

Will be at the

CHICAGO SHOW

1st Regiment Armory, February 3d to 10th

IF YOU WANT THE

Simplest, Most Durable, Easiest Operated, Built for Service, Economical Car

Examine the Lambert

WRITE US FOR CATALOGUE

TOURING CARS, RUNABOUTS AND COMMERCIAL TRUCKS

THE BUCKEYE MFG. CO., = Anderson, Ind., U. S. A.

Members A. M. C. M. A.

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MICHELIN TIRES

(It is considered "Chic" to have Michelin Tires on your car, even in France).

Mr. E. D. Winans begs to announce that a new and large company has just been incorporated consisting of American and French capital to control the output of Michelin Tires and products in the United States under the name of Michelin Products Selling Company, Inc., 31–33 West 31st Street, New York.

All orders and inquiries for agencies and goods should be sent at once to

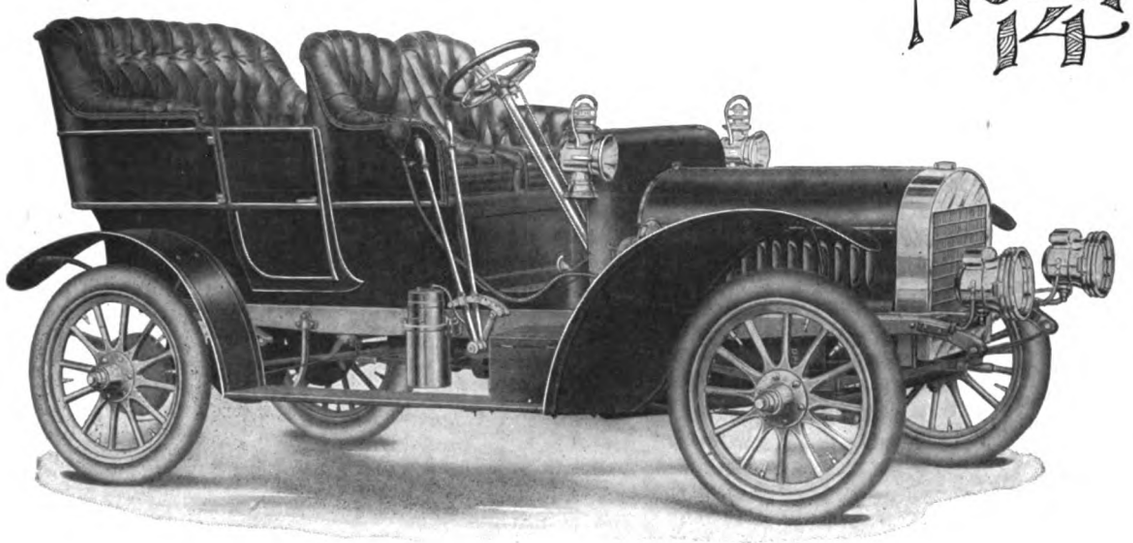
E. D. WINANS,
Gen'l Manager.

Mr. Winans is no longer connected with any other company or organization who claim to have American agency for 1906. The only representatives in the United States are the MICHELIN PRODUCTS SELLING CO., Inc., of 31-33 West 31st Street, New York.

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Rambler

Model 14



THE CAR WITH A REPUTATION

But few purchasers are able, from even the most minute examination, to judge the real working qualities of a car.

It is, therefore, well to consider the opinions of those who have had practical experience with the car in question, and we confidently refer you to the vast army of Rambler users, particularly those who, having started with the more modest types, are now using the most elaborate models of the Rambler line.

The freely expressed opinions of hundreds of these satisfied owners are at your service.

Model 14, shown above, marks the culmination of years of development in the line of utility, power and service. It is equipped with a four-cylinder vertical motor, 20-25 horse-power, sliding gear transmission and shaft drive. Price, $1,750.

Our catalogue, giving full details, will be mailed upon request.

One of six models to be seen at the Chicago Automobile Show.

Thos. B. Jeffery & Company

KENOSHA, WIS.

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THE MOTOR WORLD.

A WEEKLY JOURNAL DEVOTED TO THE AUTOMOBILE AND KINDRED INTERESTS

Volume XI. New York, U. S. A., Thursday, January 25, 1906. No. 18

ALL DEALERS NOW WELCOME

N. A. A. D. Throws Open its Doors and Takes a Few "Flings" at Manufacturers.

The National Association of Automobile Dealers has invited the independent or unlicensed dealers to walk into their parlor and to join hands with them.

This was the most surprising development of the meeting of that organization, which was held on Wednesday of last week in Hotel Victoria, New York. Despite the importance of the adoption of this "open door" policy which was in view previous to the session, little was known or said of the meeting, either before or after it; indeed, there still seems a disinclination to talk of the proceedings or to discuss details.

In the words of one of those who was present, three things were done: viz., the door was opened to all dealers, the dues were increased from $25 per year to $10 per quarter or $40 per annum, and "thirdly," to quote the Motor World's informant, "it was agreed to forget that there is any particular manufacturer in existence."

From all that can be learned, it is plain that in the dealers' association there is a number of members who are distinctly "sore"; no other word seems to express their feelings. It will be recalled that when the organization was formed last summer, the membership was restricted to agents handling licensed cars. They had certain grievances or suggestions which it was desired to submit to the Association of Licensed Automobile Manufacturers. A committee was appointed for the purpose, but a net result was that the dealers were tactfully informed that the A. L. A. M. could do nothing as a body, the alleged grievances properly being matters for settlement between each individual agent and the particular manufacturer whom he represented.

It was learned that at last week's meeting of the dealers' association that there was a general disposition to consider that the manufacturers were not inclined to meet their agents half way and that the importance of the dealer is being underrated. Some genuine bitterness was manifested in discussing the matter, the upshot being the resolution to cast aside all restrictions and make the membership open to all.

"If the manufacturers won't meet us half way, we will build up our organization and ultimately they may find it advantageous to come to us. We are their bread-winners, even if they don't realize it"—this is said to have been the substance of one speech at the meeting which met with the heartiest applause and which best defines the dealers' attitude and sentiments.

There was no election of officers, so far as can be learned, that matter being wholly in the hands of the board of directors.

Rearranging the Michelin Lines.

With the Michelin rights secure in his possession, E. D. Winans has lost no time in locating the new Michelin Products Selling Co. He has leased the pretentious premises, 31-33 West Thirty-first street, New York, and engaged practically all the former staff of the Michelin Tire American Agency, including Joseph A. Straus, his first assistant when he managed the agency.

Winans has also placed the Western representation of Michelin tires with Dan Canary, of Chicago, who is forming a selling company to handle the famous French product in that section of the country.

Marks Returning with Diamond Ideas.

After spending some time abroad, A. W. Marks, superintendent of the Diamond Rubber Co., is due to reach New York to-day. While absent, Mr. Marks has visited practically every tire plant of note on the "other side," and, it is understood, effected arrangements or exchanges of information or processes that will have a marked bearing on the Diamond tires of the future.

St. Louis Supply House in Straits.

Bankruptcy proceedings have been commenced against the A. L. Dyke Automobile Supply Co., of St. Louis, Mo., of which the Brittons—Robert F. and Roy F. are respectively, president-manager and secretary-treasurer. The petitioners and their claims are the Commercial Electric Supply Co., $449; Security Printing Co., $1,000; Norvell-Shapleigh Hardware Co., $60.

ALCOHOL GAINS ADHERENTS

Bills in Congress Assume Importance—Public Hearings to be Held.

Since the introduction of the bill to exempt denatured alcohol from taxation by Representative Calderhead, a few weeks since, the question has assumed a degree of importance that bids fair to make it a matter not easily sidetracked. There are quite a number of bills to the same effect now before the House, though none of them is considered satisfactory. Either they provide for free tax industrial alcohol only in those industries which use the alcohol on the premises in the industrial process in which it is employed, or they make insufficient provision for the control of the alcohol exempted from taxation, or are defective in some other respects.

Members of the House Ways and Means Committee are engaged in making ready a plan of hearings to be held in behalf of the proposed legislation and are quoted as saying that there is little doubt that these hearings will be the most complete and thorough of their kind that have ever been had by Congress. It is expected that the automobile and kindred industries, the varnish, paint and explosive manufacturers, the electrical and other industries, all of which are vitally interested, will be well represented.

It is now confidentently expected that since hearings are assured, a number of other bills will be introduced, one or more of which are likely to be very thorough measures. As Chairman Payne, of the Ways and Means Committee is pledged to the support of the proposed legislation and is said to very strongly favor it, there is little doubt that a bill will be reported to the House, but even the strongest advocates of the plan are unable to predict the outcome, although they consider the prospect unusually bright. Opponents of the plan are understood to be making preparations to shelve it, and in order to give them as little opportunity as possible it has been practically decided to consider no bill that involves any change in the system of taxing beverage alcohol, or any that applies to anything except domestic alcohol.

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The Week's Incorporations.

Omaha, Neb.—Powell-Bacon Automobile Co., increased capital stock to $100,000.

Sioux City, Ia.—Sioux City Motor Co. under Iowa laws, with $10,000 capital. Corporators—George C. Ray et als.

Portland, Maine.—Portland Garage Co., under Maine laws, with $10,000 capital; to deal in automobiles. Corporators—Albert G. Frost and Henry R. Stickney.

Detroit, Mich.—Detroit Ignition and Supply Co., under Michigan laws, with $25,000 capital; to manufacture automobile supplies. Corporators not named.

Lexington, Ky.—Lexington Automobile Co., under Kentucky laws, with $1,000 capital. Corporators—William T. Muir, Mary E. Muir and B. M. Herndon.

New York City.—Alpy Transfer Co., under New York laws, with $1,000 capital; to operate motor stages. Corporators—John Alpy, Jennie Alpy and Felix Alpy.

New York City.—Manhattan Auto-Car Co., under New York laws, with $1,000 capital. Corporators—B. F. Wrenn, F. DeC. Sullivan and Sidney Hartshorne.

Newark, N. J.—Newark Motor Co., under New Jersey laws, with $100,000 capital; to deal in automobiles. Corporators—Peter Broderson, James F. Kelley and George H. Walters.

Ashtabula, Ohio.—Palmer Automobile Mfg. Co., under Ohio laws, with $50,000 capital; to make automobiles. Corporators—Richard Conrad, A. Fiske, E. W. Savage, J. J. Farrell and H. R. Palmer.

Syracuse, N. Y.—Cronin Automobile Co., under New York laws, with $500 capital; to deal in automobiles and supplies. Corporators—William N. Cronin, Thomas J. Fayles and Anna R. Gleason.

College Point, N. Y.—Ray Car, Motor Boat and Machine Co., under New York laws, with $50,000 capital. Corporators—Erasmus B. Raynor, Joseph Laughlin and James Dunne.

Brooklyn, N. Y.—Plaza Automobile Co., under New York laws, with $10,000 capital; to manufacture motors, etc. Corporators—Howard B. Sands, Abraham Adelberg and Mary H. Sands.

Corning, N. Y.—Corning Automobile Co., under New York laws, with $5,000 capital; to manufacture automobiles. Corporators—George T. Wolcott, Samuel K. Wolcott and William W. Cowan.

New York City, N. Y.—Graham & Goodman, Inc., under New York laws, with $10,000 capital; to make automobiles. Corporators—C. W. Graham, J. M. Graham and F. T. Goodman.

Massillon, Ohio.—Forest City Motor Car Co., under Ohio laws, with $50,000 capital; to make automobiles. Corporators—H. A. Croxton, W. E. Stone, W. E. N. Hemperly, F. F. Taggart and I. A. Koons.

Trenton, N. J.—Philadelphia Portable Store Co., under New Jersey laws, with $150,000 capital; to sell groceries in automobiles. Corporators—H. A. Illman, Frank I. Richardson and Wilfred B. Wolcott.

Trenton, N. J.—Empire Automobile Tire Co., under New Jersey laws, with $50,000 capital; to make automobile tires. Corporators—C. Edward Murray, Charles H. Baker and A. Boyd Cornell.

Groton, Conn.—Thames Motor Co., under Connecticut laws, with $10,000 capital. Corporators—Gurdon Pendleton, Thomas W. Avery, Charles E. White, Belton A. Copp and Courtland E. Colver.

New York City, N. Y.—Duplex Ignition Co., under New York laws, with $3,450 capital; to manufacture and sell electric sparkplugs and automobile supplies. Corporators—Fritz Lowenstein, William T. Hoofnagle and Ludwig Speigel.

Portsmouth, N. H.—Consolidated Automobile Co., under Maine laws, with $1,000 capital; to deal in automobiles. Corporators and officers—H. Mitchell, Kittery; S. J. Morrison, Portsmouth.

Alameda, Cal.—Alameda Garage, under California laws, with $20,000 capital; to deal in automobiles and supplies. Corporators—Paul K. Buckley, Frank Smith, E. K. Taylor, William E. Keene, and John F. Buttrick.

Croesus Coming from Kansas City.

Two new cars, the Croesus four-cylinder touring car and the Croesus single-cylinder runabout, are scheduled to make their appearance from Kansas City, Mo., the Croesus Motor Car Co., with G. W. Curtis and W. I. Bell its leading spirits, having been formed for that purpose. Scant details have been given out, but Curtiss, the inventor, says that the company has taken quarters at First and Main streets, that city, and will turn out twenty-five cars this season. The touring car will have four cylinders, developing 40 horse-power and sell for about $4,000. It will weigh 2,390 pounds. Its conspicuous feature will be that no brass trimmings will be used, all the metal parts being silver plated. The runabout will be a single cylinder affair, developing 22 horse-power, it is claimed.

Palmer Completes Organization.

At least one new car will make its appearance at the Cleveland, Ohio, show, to be held next month. It will be a runabout, employing a 9 horse-power single-cylinder two-cycle engine, and will sell for $400 without tires, or $500 complete. The Palmer Automobile Mfg. Co. has been incorporated at Ashtabula, Ohio, for the purpose and has a model car nearly completed. A sales depot will be established at 731 Schofield avenue, Cleveland. These officers were elected last week: President and superintendent of construction, H. R. Palmer, of Cleveland; vice president, R. Conrad, Ashtabula; treasurer and general manager, A. P. Fisk, Ashtabula; secretary and sales manager, G. Cathcart, Cleveland.

Independent Makers at Breakfast.

While luncheons, noon and midnight, and dinners were the rule during New York show week, the American Motor Car Manufacturers' Association varied the usual order by giving a breakfast on Friday last at the Imperial Hotel. Its purpose was chiefly to acquaint the newer members with the old ones.

At the breakfast it was announced that the annual meeting of the association would be held in Chicago, Friday, February 9th. Two applications for membership, at least, will be acted on, those of the Crawford Automobile Co., Hagerstown, Md., and the Dorris Motor Car Co., St. Louis, Mo.

Part the Weather Plays.

"The weather plays a bigger part in this business than many people imagine," remarked J. Elmer Pratt, of the Cadillac staff, one day last week. "In the hight of the season it is not at all unusual for us to receive 15 or 20 telegrams per day reporting unfavorable weather and requesting that shipments specified for that particular date be held until a later date. When a factory like ours, that is producing 40 cars per day, each due on a specified day, receives such messages, it requires rapid calculation and intimate kuowledge of the country and weather conditions to satisfactorily readjust the shipments."

New Orleans Negotiates for Factory.

According to advices from New Orleans, La., W. L. Judson, of Chicago, who says his sons are owners of the Continental Motor Works, is endeavoring to raise $100,000 capital to start an automobile factory in the Southern metropolis. The New Orleans Picayune states that automobiles of the "Mud King" variety will be manufactured in addition to gasolene engines for multiple uses. Forty-eight thousand dollars of the required amount has been subscribed.

Toronto Sets Show Dates.

March 31 and April 2 to 7 are the dates which finally have been selected for Canada's automobile show, which will be held in Granite Rink, Toronto. Space amounting to 24,000 square feet in all is at the disposal of the "International Motor Show," as it is styled.

Ohioans Dickering for Owosso Plant.

It is reported from Owosso, Mich., that the Detroit Trust Co., trustees of the bankrupt estate of M. I. Stewart & Co., is negotiating with an Ohio firm for the sale of the Stewart carriage factory there for $50,000. The intending purchasers, it is said, will manufacture automobiles.

Willis Gets Amazon Tires.

The Amazon Rubber Co., Jamestown, N. Y., who recently embarked in the manufacture of automobile tires, have placed the Eastern sales agency for their product with the E. J. Willis Co., New York.

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In the Retail World.

The Western Motor Co., of Los Angeles, Cal., has lengthened its line. It has taken on the Buick.

Smith & Walker have started a garage in Ottawa, Ill. They are located in the Large Building.

The Napier Motor Car Co., of Boston, has established a branch in New York, at Broadway and Fiftieth street.

The Morrison-Tyler Motor Co., of Boston, agents for the Maxwell and Ranier cars, have taken on the Marion.

The Mosehart & Kelly Co., Houston, Texas, have purchased a plot of ground, 50 x 150 feet, at Caroline street. Upon it they will build a garage.

Doolittle Brothers, who have a garage at 59 Broadway, New Haven, Conn., have belied their name. A brick addition is now under process of construction.

The Torbenson Motor Car Co., which recently established itself in Bloomfield, N. J., has taken the Northern New Jersey territory for the Frayer-Miller car.

A. Fenneman is erecting a garage to be operated in connection with the Suburban Hotel, on Park Heights avenue, Baltimore, Md. The structure will measure 100 x 300 feet.

The Covley & Clark Motor Car Co., Portland, Ore., is erecting a one-story garage, 100 x 150 feet, at Fifteenth and Washington streets. It will be completed about March 1st.

A new machine shop, 40 x 65 feet, is being added to the garage of the Palace Automobile Station Co., at 348 Trumbull street, Hartford, Conn. For 1906 the company has taken the agency for the Thomas and Haynes cars.

The White steam cars will hereafter be represented in Kansas City, Mo., by the Missouri Valley Automobile Co., at Fifteenth and Troost avenue. Henry C. Merrill, who formerly had the agency, is retiring from business.

With J. W. Reichley as the leading spirit, a company under the name of the Southern Pennsylvania Automobile Co., will shortly begin business at 23-29 Beaver street, York, Pa. A general garage business will be done.

The George W. Worthing Automobile Co. has been organized in Fond du Lac, Wis., and on March 1st a salesroom will be opened in the Haas building, at Second and Mary streets. The company will also conduct a garage and motor livery.

J. A. Clairmonte, of Los Angeles, has taken the agency for Southern California for both the English and the American Napier cars. In furtherance of the business a warehouse and garage, 60 x 160 feet, is to be erected at Spring and Seventh streets, in that city.

The Standard Automobile Co., of Pittsburg, will move February 1 to that city's "row," having leased the corner store of the new building at Woodward and Alexandrine avenues. The Standard line for 1906 will comprise the Packard, Peerless and Autocar.

The Midland Automobile and Bicycle Supply Co. has established itself at 1454 Market street, San Francisco, Cal. Henry Ephriam, of the Ephriam Bros., Buffalo, N. Y., who made such a picturesque failure some time ago, is one of the partners. Benj. Stacy is mentioned as the other.

The Taylor Automobile Co., Albany, N. Y., is having its garage on Orange street renovated. The entire rear section of the old building has been razed and re-erected, which gives a much needed increase of room. Concrete floors and metal ceilings are some of the improvements.

A. W. Gump, who was widely known in the bicycle boom days, because of his establishment in Dayton, Ohio, has started in business at 1118 and 1120 South Main street, Los Angeles, Cal., as the A. W. Gump Automobile Co., with $25,000 capital. He will do a general automobile business.

L. H. Elmer, Hartford, Conn., who, under his own name, has been handling the Rambler and Ford cars, is about to convert his business into the Elmer Automobile Co., capitalized at $15,000. He has leased new quarters at 1100 Main street, which will be conducted solely as a salesroom without a garage annex.

Ambrose West and Laning Harvey have purchased the controlling interest in the Auto Machine and Repair Co., on North Washington street, Wilkes-Barre, Pa., and will make improvements adequate to care for that city's growing business, this being the only garage in Wilkes-Barre. The Thomas, Peerless and Locomobile lines will be carried.

Henry J. Ullman has sold his interest in the Pardee-Ullman Co., Chicago, to Fred J. Pardee, Dr. W. P. Johnson and E. S. Hamill. Pardee and Johnson have been identified with the company for a long time, but Hamill is a newcomer. The name and style of the company will soon be changed. The firm will continue to handle the Packard and Franklin cars.

The Flint Motor Car Company, of Providence, R. I., which is the agent of the Packard automobile in that city, has installed a repair and adjustment shop for work on the Packard cars owned in that State. Elliott Flint, the head of the company, recently secured a lease of a building on Pitman street, in which, until a short time ago, motors for boats were manufactured, and has fitted up the shop in a thorough manner. The building is 25 x 70 feet.

The McKinley Motor Car Co., Rochester, N. Y., agents for the Mitchell and National cars, are erecting a substantial new salesroom and garage at Main and University streets, which, when completed, will enable them to properly care for a large and growing trade. A. H. Sowers, secretary and general manager, was one of the live agents in attendance at the New York shows and declared himself as more enthusiastic than ever over the Mitchell and National lines after comparing them with everything else he had seen exhibited. His one concern was that he might not be able to obtain enough of them.

Dealers Refuse to Pay Garage Tax.

Whether the city ordinances levying a special tax of $60 a month upon automobile garages in Los Angeles, is constitutional or not is the problem the Southern California Dealers' Association is trying to solve. The ordinance was passed several months ago, but as the garage was only one part of the law, the dealers failed to discover the existence of the ordinance until an effort was made to collect the tax. Then W. K. Cowan, the energetic president of the association, immediately called a special meeting, which resulted in an unanimous resolution to stand pat upon the position taken by several dealers and not pay the price of "unjust discrimination." Just what the city authorities will do has not yet been made plain.

Mexican Notables Buy Northerns.

M. W. Walker, of Mexico City, one of the many Northern agents at the show, proudly announced that he had sold the wife of President Diaz, of Mexico, a Northern car, and followed up the good work by selling another one to the Mayor of Mexico City. Business prospects in the capital city of the neighboring republic are exceedingly bright, according to Mr. Walker.

Hartford Brings Home Gobron-Brille.

While attending the Paris Show, E. V. Hartford, president of the Hartford Suspension Co., of New York City, secured the American agency for the Gobron-Brille car, samples of which are already in evidence. The car employs a 35 horse-power four-cylinder motor, the feature being that each cylinder contains two pistons.

Fire Destroys Drop Forge Works.

Fire on Tuesday night almost totally destroyed the plant of the Union Drop Forge Warks, Chicago, Ill. The concern made forgings for a number of automobile manufacturers, whom the fire may embarrass considerably.

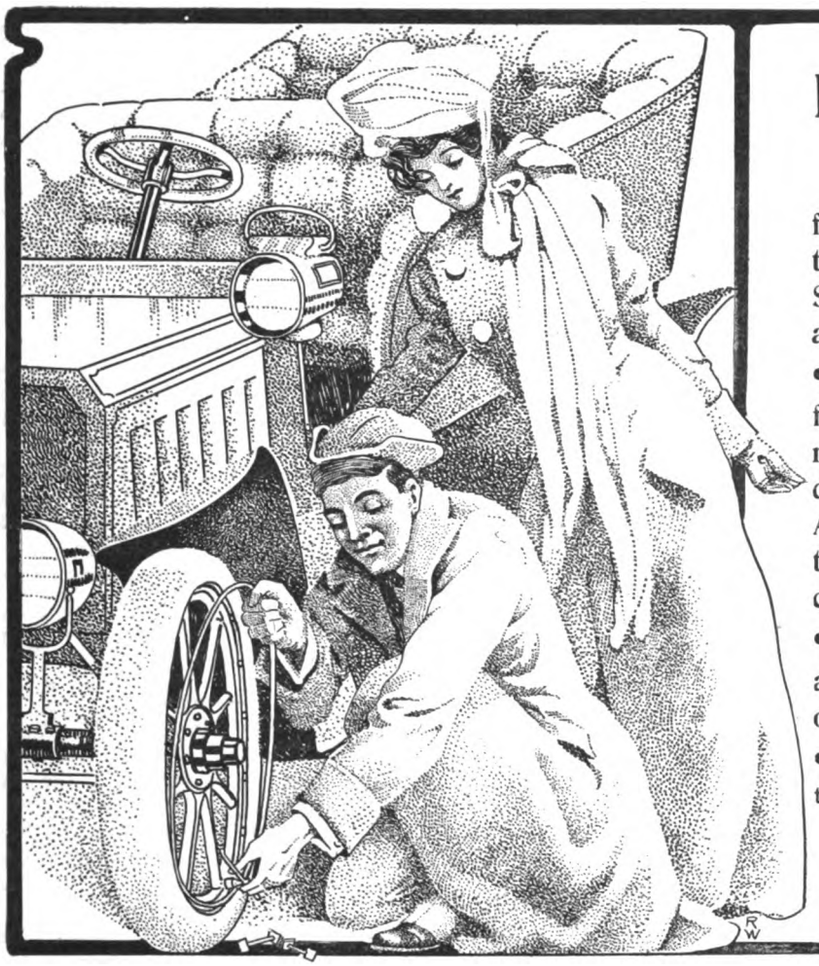
Lexington Sees a Factory Coming.

Lexington, Ky., has visions of an automobile factory "in its midst." If some unnamed persons can obtain a site, the new company, composed entirely of foreign capital, will put "about $75,000" into the enterprise, and Thomas R. Dewhurst, the local dealer, will be made resident manager.

Buckboards Going Abroad.

Orders for five Orient buckboards from far-off Tasmania and seven more from New Zealand in one week, give an indication of the way the little machine is catching on in foreign lands.

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¶ We would like to send you an article on the subject of different tire constructions.

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"Shaking Down" the Motorist.

It is very evident that, considering the automobilist a "good thing," those Honorables, the Messrs. L'Hommedieu and Freylinghuysen, the one of the New York legislature, the other of the New Jersey law factory, mean that he shall be thoroughly "plucked" and "shaken down." Their respective bills which seek to impose a per horsepower tax on motor cars make this quite plain. So far as Mr. L'Hommedieu is concerned he is not wholly to blame. A few enthusiastic souls who own automobiles and who are blessed with the world's goods, have undertaken to give assurances that automobilists generally are simply itching to pay more taxes if the revenue is but applied to road improvement. It was very nice of those enthusiastic souls to do that sort of thing, but the hundreds who have invested their savings in 10 or 15 horsepower cars for the family's sake, scarcely will relish the kindness. Ten or fifteen dollars represents 1,000 or 1,500 cents to them, which they will not pick up in Wall street or a pool room. These less fortunately situated individuals may also be given to wondering why their rubber-tired cars are singled out for special taxation, while the steel-tired carriage or the heavily loaded farmer's wagon, which do far more injury to the highways, are permitted to escape.

Unfair as is the New York measure it is little more than comparable with the New Jersey bill, which, so far as non-residents of the State are concerned, would give substance to the old joke regarding New Jersey being a foreign country. It certainly is "the limit." To first tax the car according to the horse-power rating and then impose an additional tax on the operator on the same basis, while making his use of his property and the public roads, subject to the whim of any magistrate, is akin to wringing blood money from the residents, while to exact a fee from a non-resident each time he enters the State, is carrying the squeezing process to its logical conclusion.

If imitation is flattery, Russia and Massachusetts should be flattered by the New Jersey bill. It is as disgraceful a measure as ever was proposed. It is nothing more or less than an effort to make "grafting" by the State legitimate—an effort to "shake down" a certain class of American citizens. The old cry regarding making the roads safe is being used to cloak the grab for the motorist's pelf.

Suppression of the Noise.

Apart from all consideration of the improvements in mechanical detail that have brought it about, it must be generally conceded that the elimination of the noise made by the car in operation has been one of the advances that means most to the general public. And if the great extent to which this had been accomplished in 1905 was then a matter of general congratulation, how much more so is it now?

With exceptions that are so few in number that they may be said to be only sufficient to bear out the time honored statement of proving the rule, the cars of 1906 are more silent than any other user of the highway, or of the permanent way either, for that matter, for there is now less noise of moving parts than is produced by the best of locomotives. Probably the only exceptions to the rule are to be found in the ranks of the single and two-cylindered cars, particularly of the horizontal type. This is true to a greater extent in the case of the first named for obvious reasons. It is difficult to take care of the intermittent power strokes of a cylinder of such large capacity in an adequate manner without unduly increasing the size of the muffler, although it is to be noted that great advances have been made in this direction even here.

The single cylinder car is no longer the noisy object it was, and the same is true of the horizontal opposed motor to a much greater extent than formerly, although there is still an occasional offender in this respect. Even the up-to-date car with a motor of the standard four-cylinder type is not entirely blameless, for it is noticeable in the case of some of them, that while decorously silent at all speeds when new, they begin to wheeze and grunt in a manner akin to that of their predecessors a few years previous, after a little service.

Many causes have contributed to bringing the modern gasolene car on a par with the steam and electric vehicles, which have always been held up as models and long though unapproachable in the matter of quiet operation. The muffler was at one time considered the root of all evil in this respect, and while this preventative of noise has been wonderfully improved, it is noticeable that it has been but a factor in bringing about the result. The adoption of multiple cylinders has had considerable to do with it, while means of silencing the suction in the carburetter and the use of improved forms of drive have been largely instrumental, but more than all these has been the improved efficiency of the engine itself. The expansion of the burning gases is now taken advantage of to such a degree that the average racing motor without a muffler makes but little more noise than its silenced predecessors of a few years back.

To the constant rotational velocity of the four-cylinder motor is due the elimination of the rattling and hammering caused by the intermittent impulses of the single-cylinder motor, which became more and more noticeable as the effect of wear showed itself in loose parts and joints, adding their quota to the general din made by these old-timers. A long step toward gaining the confidence of the prospective buyer was made when all unnecessary noise was suppressed.

Opening of the Shop.

Probably no other symptom can be taken as better illustrative of the growth and progress of an industry in point of breadth and general scope than the development of the atmosphere of the open shop. Not the

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"open shop" against which forces of organized labor are concentrating their activities, but the open shop in which secret process are unknown—the shop to which all may have access, even though they be vitally interested in the work of a rival concern. True, the question of the value of the really secret process or method of attaining some specific end, still remains, as it always has been, a moot point with certain classes of trade, but waving aside all discussion of the right of the thing, it is a fact that the greatest manufacturing concerns in most lines of work are thoroughly accessible to all who care to visit them so long as they be honest in their intentions.

As a result of the sentiment, which breeds this state of affairs, the manufacturers abate their natural rivalry to a sufficient extent so that they can work together in the forwarding of such interests as are common to them, and each profits by the experience of the other. As a result of this, in turn, makers' associations are formed, engineers' clinics are held, and the good of the cause is advanced at an immensely more rapid rate than otherwise would be possible.

While the automobile industry was in its swaddling clothes, the rivalry between maker and maker was of the harsh sort that breeds the closed shop. The draughting room and the model room of the factory were as the holy of holies to the common mechanic, while the mere outsider might count himself as being truly privileged if he ever got beyond the confines of the business office. In those days one or two of the less independent makers even went to the expense of purchasing a car of another maker and then, with great pretense of secrecy, tearing it apart and measuring it up for future reference. Happily, however, for the welfare of the industry, such firms soon went to the wall, while those who from the first worked along independent lines, coming to the conventional standards of design only with a great show of reluctance, and maintaining their originality most rigidly, are the ones which to-day are most successful—not, perhaps, as a result of their independence, so much as a result of the amount of intelligent and thoughtful effort which they infused into their work.

But in contrast to this state of affairs, behold, to-day, the spectacle of a maker inviting his customers to come to his plant not as casual visitors, but to tarry and labor with the regular force until they have mastered the details of construction of the car, and at the same time, as must inevitably be the case, the shop methods as well. And this, not in a single instance, but in several, while in other cases, the makers are sending out literature to their customers which, a year or two ago, would have been considered as suicidal to the interests of the concern. More than this, behold the case of a maker offering to loan one of his cars to any fellow maker for trial purposes, in order that the advantages of a particular method of construction which he particularly favors may be studied to advantage, and behold another maker, offering to reciprocate by loaning him one of his own cars in return for it! Two years ago both of these men would have been considered nothing less than lunatics, while to-day, they stand forth as men of modern enterprise. Each is bound to benefit from the example of the other's work, and that possibly to the loss of a certain amount of prestige on the part of the one; but each, realizing that his dependence is on the market, which is only to be courted by progress along the lines which most need it, is willing to contribute to the advancement of the whole cause, trusting to his own business ability to secure for him the toll which is his due, and which he has earned.

The time has passed when all that is contained under the hood and beneath the chassis of the car is as a sealed book, only to be opened and read by factory experts. The representative owner is coming more and more to understand the workings and the failings of the mechanism which is under him, and, as time goes on, he will tend to learn more and more of its needs and capability. The function of the chauffeur is coming to be that of a hireling who performs the tasks which the owner has not the time nor inclination to do—not what he could not do if he chose. That being the case, once a car has passed out of the hands of the dealer, it is open for inspection to anyone who chooses to investigate its construction. More than that, it is open for reproduction by anyone except insofar as it is covered by patents, and those rights cover it in the shop as well as out of it. Hence practically nothing is to be gained by guarding it as some sort of priceless treasure which would lose its value on sight by the profane eye. Hence, too, all the secret methods of the closed shop of a few years ago count for naught, especially as the employment of spies and gobetweens, as practiced in those days, brings all of the labor of secrecy to naught and a lot of worry goes to waste.

LICENSES ARE AGAIN UPHELD

Motorists Lose Second Round in Unwin Test Case—Appeal to be Filed.

"Second blood" has been drawn by the State of New Jersey in the case brought by the National Association of Automobile Manufacturers to test the constitutionality of the various state license and tag laws. The official title of the case is the State of New Jersey vs. Unwin, and it will be recalled that in June last, Harry Unwin invaded the State "across the river" without a license number and invited arrest. He was duly fined $10 by Judge Higgins in the First District Criminal Court in Jersey City, which he refused to pay.

The anticipations of the defense have been fully realized in that the appeal has been decided adversely to their interests by Judge Blair of the Common Pleas Court, whose opinion sustains the conviction. This decision does not accordingly carry much weight as it is but a step in the process, the next move in which will be an appeal to the Supreme Court of New Jersey, then to the Court of Errors and appeals, Jersey's court of last resort, and from there to the Supreme Court of the United States.

The reasons given by Judge Blair in his opinion are as follows:

First—The requirement of the statute that every person should procure a certificate, at a fee of $1, is not the imposition of an additional tax upon such vehicle.

Second—That the filing of a certificate and the $1 fee is a license fee, and its exaction is the exercise of the legitimate police power of the State.

Third—That the exaction of this fee is not the creation of a new and distinct class among those entitled to the use of the public highways.

Fourth—That a distinction may be legally made in the matter of a license fee between the manufacturer of motor vehicles and owners who use them for pleasure.

Fifth—That the law in question, though it may not accomplish the whole purpose of its enactment, to wit, the complete identity of the owner of the vehicle, does accomplish that object in a measure and is therefore valid.

Virginia Also to Regulate Licenses.

Virginia even is delving into motor politics. Delegate R. E. Byrd, of Winchester, has drafted a bill which he will introduce into the legislature, the peculiar chief feature of which is the requirement of a license or permit to operate in Frederick county, from when the Delegate hails. As no other counties are mentioned, other senators and delegates are imploring Mr. Byrd to include their counties under its provisions. Another important section is that which gives to anyone the power to arrest any automobilist violating the law, without the formality of procuring a warrant. Of course, heavy fines are provided for any infractions.

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NEW JERSEY'S HOGLIKE GRAB

Bill Offered to Wring More Money from Motorists—Admission Fee for Tourists.

On the supposition that class legislation—whereby automobilists are made by laws to pay for the undoubted privilege of every free-born American citizen—is just, a few of the provisions of the new automobile bill introduced in the Senate of the New Jersey legislature, Tuesday of this week, by Senator Joseph S. Freylinghuysen, of Somerset, are equally reasonable; but those few are so over-balanced by the totally unjust provisions that the good points of the bill are overwhelmed by the incongruity of the bad. While it masquerades as a measure for the public safety, it is none the less a hog-like grab for the money of a particular class.

The bill which the honorable gentleman from Somerset, who, by the way, owns an automobile, would have become a law, proposes to make the State of New Jersey a circus tent and its inhabitants the clowns, by charging a dollar admission to non-residents to get within its sacred confines and in view of its exhibits behind the shelter of goggles; to make residents pay so much per horse-power of their cars for licenses and additional fees upon the same basis for the privilege of operating them; gives power to make arrests without warrants and power to any and all motorphobic corn-fed magistrates to revoke licenses; provides for a "commissioner of automobiles" whose sole duty will consist of drawing the fat salary of $3,000 per year, to be paid by the unfortunate persons who have been allowed to make use of their property upon the public roads of the State.

Summarized, the provisions of Mr. Frelinghuysen's iniquitous measure are:

1. Provides for a commissioner of motor vehicles to be attached to the secretary of State's office, and for as many inspectors as may be necessary, who shall have power of arrest and who are charged with the duty of detecting violations and obtaining evidence of violations.

2. Gives commissioner authority to authorize chiefs of police to give certificates of registration and licenses to operators and require all persons operating a vehicle to be licensed.

3. Provides for an examination of all persons before they are licensed to run motor vehicles.

4. The commissioner shall keep a record of his official acts and shall make an annual report to the Governor with recommendations regarding the use of motor vehicles.

5. Provides for an annual registration fee of fifty cents per horsepower for all vehicles, and twenty-five cents per horsepower for all drivers.

6. Provides for a "Short Time Tourist Registration" of $1 per day.

7. Limits the number of machines to be run under manufacturers' registration to five and the number of days which a person can have a dealer's machine on dealer's registration number to five.

8. Limited the age of drivers to eighteen years.

9. Driver's photograph must be attached to his license.

10. Provides that the official numbers on the machine shall be kept clean and free from dust.

11. Provides for a rate of a mile in seven minutes in built up portions of towns, and cities, at crossings of country roads, and while passing other vehicles of any kind; elsewhere at the rate of a mile in three minutes, but at no time so as to endanger life, limb or property of any person, and no speed regulations shall be held to relieve any driver of the consequences of his negligence.

12. Power to arrest without warrants for any violation.

13. Warrants issued shall be good throughout the State.

14. Any person convicted of violating any of the provisions of this act shall be subject to a fine of not more than $500 and imprisonment in the county jail for a period of not more than sixty days.

15. Any magistrate may revoke a driver's license, but the commissioner may for good cause restore it.

16. All moneys derived from any source under this act shall become a part of the State road fund.

17. Part of this State road fund shall be used by the State road commissioner to place suitable signboards at road intersections and to provide and maintain lights at dangerous points at night.

New York to Tax Horsepower, Too.

It has appeared again—Senator Erving L'Hommieudieu's measure to tax automobiles one dollar per horse-power—and it's coming was not totally unexpected, in view of the fact that the New York State Automobile Association, last week, as much as said that New York automobilists would not mind being taxed should the proceeds be devoted to the maintenance and care of State highways.

The gentleman from Orleans county introduced a bill in the Senate Monday night. It proposes to mulct automobilists one dollar per horse-power of their cars, the tax thus imposed being made a lien on the vehicle, but the owner is made exempt from all other taxes, general or local, to which motor vehicles as personal property may be subject under the laws of the State of New York. It is provided that the tax be paid before the registration of the machine. Motorcycles are exempted.

Payment of the tax must be made to the secretary of State, who is charged with the enforcement of the provisions of the act. The proceeds of the tax are to be applied by the State engineer to the construction or repair of the State highways in accordance with the provisions of the Good Roads act.

STANLEY SWEEPS BEACH

Little American Steamer Spreadeagles Foreign Monsters and Shatters Records in Every Event—Small Crowd at the Carnival.

Ormond, Florida, Jan. 23.—Today a wheeled vehicle traveled faster than any wheeled vehicle ever traveled before—a mile in 31⅘ seconds, or at the rate of 113 miles per hour. It was Stanley's steam "beetle" that did the traveling and to tell the truth, its performance was a mighty good thing for the Florida speed carnival, as on this, the inaugural day, the weather, the crowds and pretty much all else was decidedly dull.

At 10 o'clock, when the first race was due to be started, the beach and the ocean were enshrouded in fog and rain was falling. It looked like a case of "no race." An hour later, however, the fog lifted, the rain slackened to a sprinkle and the competitors were called out and the hotels notified. Despite advance reports of overcrowded houses, there is room to spare in the hotels here, the number of guests being smaller than last year. Most of them are interested visitors, too. They are either trades people direct from the New York show, or officials connected with the carnival. To-night some one suggested that it looked almost as if a Glidden tour gathering had been dropped into Ormond. Many of them were not so interested, however, that they cared to stand on the beach in the rain. The hotel was far more comfortable. As a result, comparatively few persons witnessed the "beetle's" wonderful flight.

"Society" is conspicuously absent—not even Mrs. Howard Gould and husband are here and in previous years they always constituted a feature. In fact, Mrs. Gould grew so enthusiastic last January that in the presence of the dutiful Howard she avowed that there would be two or three Gould racers on the beach on this occasion. But alas! they are missing.

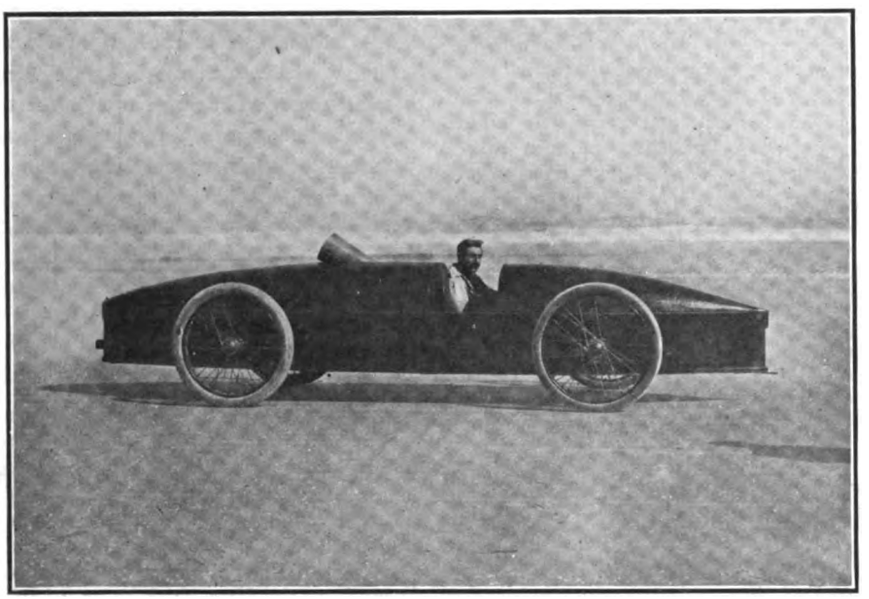
Albert G. Vanderbilt is here, however, but he and his party do not mingle with the "common herd" at the hotel. They remain close to their private railway coach in which they are abiding. Vanderbilt's much touted eight-cylinder, 250 horse-power monster also is here, which is about all that may be said of it. It has done a lot of groaning and snorting, but all the Italians and Frenchmen on the ground have not been able to make it move. To-day it is said that the trouble has been located in the clutch and this may be the case. However, seeing is believing. When the Vanderbilt "mastadon" runs the fact will be freely acknowledged.

It is a good thing for the credit of America also that the Stanley "beetle" is here this year, else it would appear very much like a foreign meet. It was the only American production that competed in to-day's events and it won the two in which

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it was started in hollow fashion. It was not eligible to the other one, which was won by Vincenzo Lancia, the dashing Italian and the "hero" of the Vanderbilt cup race.

Auguste Hemery, the Frenchman, who captured that cup in October last, is here with a string of high-strung Darracq cars and to-day gave evidence that while he has acquired a bit more style in the interim, the surliness which his face reflects, is of the same undiluted brand. When one of his cars proved over-weight, he promptly "boiled over" and announced that he would not race at all. He towed the three Darracqs to the stable and his sour face grew sourer. C. D. Cooke, of the American Darracq Co., immediately got busy. He did not bow down to Hemery, but instead went about effecting arrangements with Basle to drive the cars. When Hemery discovered the trend of things, a change came over him and he will drive after all.



THE CAR THAT DID—THE STANLEY "BEETLE."

The Stanley, which was driven by F. H. Marriott, of Newton, Mass., made its phenomenal flight in the most unimportant race of the day, the one-mile for steam cars, and the race was made possible only by entering two other Stanleys to "keep up appearances." They were, of course, hopelessly outclassed by the "beetle" and description is unnecessary. The little racer simply skimmed the one mile of marble-like sand in time that almost staggers comprehension and that is all there is to it. Earlier in the day, however, it had met "foemen" that appeared worthy of its steam—the 110 horse-power Italian racer, driven by H. W. Fletcher, and the 100 horse-power Napier, piloted by Clifford Earp, of London. They met the little 30 horse-power Stanley, guided by Marriott, in the first heat of the mile race for the Dewar trophy, popularly dubbed the "Scotch High Ball Cup." In this, as in the other event, the Stanley simply spreadeagled the big foreigners. It ran away from them with ridiculous ease, doing the mile in 32⅕ seconds, which stood as the world's record for a short time only. Earp was nearest to it, 7⅕ seconds behind. Lancia, driving the 110 horse-power car, which was the sensation of the Vanderbilt cup race, won the second heat in 37⅗ seconds, but he had trouble with his machine and could not get it going in time to meet the Stanley in the final in which the "beetle" again finished far in front, in 33 seconds. Each of its performances to-day was better than the old record of 34⅗ seconds, made on the beach last year by McDonald, the Englishman. The beach was wet and heavy, making it seem plain that with more favorable conditions, the little car will do the mile in 30 seconds or better—the long sought two miles a minute—beyond shadow of doubt.

It goes without saying that F. E. Stanley, of Newton, Mass., who built the new speed marvel, is happy beyond expression. His hand is limp from the shaking it has received, but his generous beard is still parted by a smile that hardly will wear off. There's another man who is doing a heap of smiling and he has no hair on his full face to hide it—Herbert Githens, of the G & J Tire Co. It is enough to say that the Stanley is shod with G & J's.

The summaries:

One Mile International, for the Sir Thomas Dewar trophy.—First Heat—Won by Marriott (30 h. p. Stanley), 32⅕ seconds; Earp (100 h. p. Napier), second, 40 seconds; Fletcher (110 h. p. Fiat), third.

Second Heat—Won by Lancia (110 h. p. Fiat), 37⅗ seconds; Cedrino (110 h. p. Fiat), second, 38⅕ seconds.

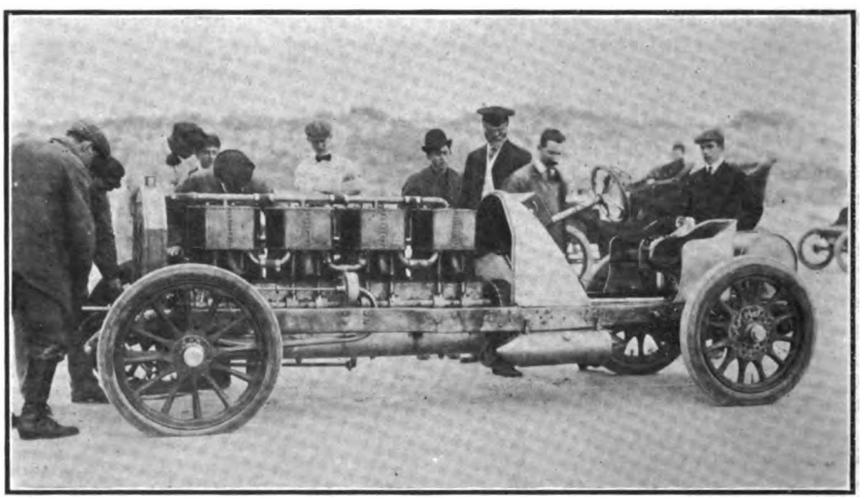
Final Heat—Won by Marriott (Stanley), in 33 seconds; Cerdino (Fiat), second, 38 seconds. Lancia did not start.

One Mile Heavyweight Championship.—First Heat—Won by Cedrino (Fiat), in 37⅗ seconds; Fletcher (Fiat), second, 39⅘ seconds.

Second Heat.—Won by Lancia (Fiat), in 42 seconds; Earp (Napier), second, 43⅗ seconds; Downey (90 h. p. Diamler), third.

Final Heat.—Won by Lancia, 37 seconds; a new competition record for gasolene cars; Fletcher, second, in 37⅗ seconds; Cedrino, third.

One Mile Steam Championship.—Won by Marriott (Stanley), 31⅘ seconds. Two smaller Stanley cars started in order to qualify the entry of the Stanley racer.



THE CAR THAT DIDN'T—THE VANDERBILT "MASTADON."

Ormond, Florida, Jan. 24.—Again were Marriott and his Stanley "beetle" and the acrid Frenchman—Hemery—the sensations of the carnival. Marriott drove the steamer five miles in 2 minutes 47 seconds, cutting a slice of thirty seconds from the former record. The sour visaged son of France who yesterday acted in a not unexpected childish manner, to-day let his stubbornness explode with a bang, which resulted in his ultimate suspension from participation in the remaining Florida events and the quick dispatch of a cablegram to the Automobile Club of France, asking for his permanent suspension.

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Although wet, the atmosphere was so balmy on Tuesday that the male spectators were comfortable without vests, and several "helpers" divested themselves of coats and strutted around with shirt sleeves rolled up to their elbows. To-day, however, the changed weather conditions made fur coats a luxury, and several parties built huge bonfires on the beach in the effort to get warm. The strong northwest wind was chilly, but was favorable to record-breaking—the lone three events being run from Ormond towards Daytona, to take advantage of it.

Several long delays, tiresome and tedious to spectators and contestants alike, materially shortened the program. To begin with the start was made an hour late by not having the timing apparatus in readiness and then Hemery's sulks caused more delay and friction. There were only three events and and the day's racing was called off when the tide was still out because there were not enough cars to line up, five of them having been discommissioned.

Lancia of Italy, and Earp of England, came together in the first heat of the five-mile open championship. The English driver led until the four mile mark when he was forced to slow down to avoid colliding with a touring car which had been allowed to get on the course—Lancia went past with a rush, Earp slowing up and stopping a few yards from the tape. The Stanley "Beetle's" wonderful flight occurred in the second heat and when the result—five miles in 2:47—was announced, no one moved an eyelash. Records are now expected of it every time it starts. Fletcher, in a 110 horse-power Fiat, was Marriott's opponent, but at no time did he have a ghost of a chance. Marriott's time works out to an average of a mile in 33⅗ seconds, or 107 miles an hour. The "beetle" had a fine chance for another pinch in the final heat, but a burned hole in the burner made Marriott coast the last mile. He was passed by Lancia and Fletcher, who finished in this order. The former's time was 3:01⅗.

It was in the second heat of this race that the trouble with the sour-visaged Hemery occurred. In making the turn for the rolling start Fletcher and Hemery rounded short and left the steamer behind. The flag signalled "no go," but Fletcher and Hemery continued. When the officials called a restart, Hemery, who has more than once disgraced himself by his dogged stubbornness, flatly refused to run again and told the judges that if he started again it would be in the final heat. The officials spent a painful half hour trying to explain the rules and G. D. Cook, the Darracq's American rperesentative, wrestled in vain with Hemery. The Frenchman fumed and swore, in his native tongue, of course, and finally the A. A. A. representatives got tired of arguing and suspended him on the spot. Two quick cablegrams were sent to France—one asking that the Automobile Club of France suspend Hemery for good and all, and the other from Cook to the Darracq firm, asking permission to substitute another driver to take charge of the stud of Darracq cars. So it is probable that the 200 horse-power double engine monster may yet compete. Fletcher, who is now without a car, is the most probable applicant.

A pitiable exhibition was the middle-weight championship at five miles, Emanuel Cedrino in the 24 horse-power Fiat and "Deacon" Holmes at the wheel of a 40 horse-power Wayne being the only starters. The latter refused to respond to its master's touch and the Italian won the race in runaway fashion in 3:53⅗. Holmes was more than a mile behind.

Two of the big racing cars went down and out in the five-mile heavy-weight championship. They were Lancia's Fiat, whose transmission went wrong, and Fletcher's Fiat, which broke a piston and the crank case. Lancia's car may be repaired in a day or two, but the other is hopelessly eliminated. This event was run off in one heat and resulted in an easy victory for Earp (Napier) over "Joe" Downey (Mercedes), Lancia retiring at two miles and his teammate at three and one-half.

Frank Kulick had the Ford racer on the course early this morning for a practice spin, but it did not run satisfactorily and was taken back to the garage. Louis Chevrolet attempted also to take the Christie down the beach, but it broke down a mile from Ormond and at 4 o'clock this afternoon the Americanized Frenchman was still coaxing it to mote. A force of mechanics are working industriously on the monstrous Vanderbilt car, but their labor seems to have been in vain. It is doubtful if the much touted "250" will be seen in any of the events, and will not occasion much surprise if Alfred G. shakes the sand of Florida from his shoes and hies back to Manhattan before the week passes.

The summary of to-day's racing follows:

Five mile open championship.—First heat—Vincenzo Lancia, 110 h. p. F. I. A. T., first; Clifford Earp, 100 h. p. Napier, second. Time, 2:45⅗. Second heat—Fred Marriott, 20-30 h. p. Stanley, first; F. W. Fletcher, 110 h. p. Fiat, second. Time, 2:47 and 3:02. Final heat—Lancia, first; Fletcher, second; Marriott, third. Times, 3:01⅕, 3:02, 3:03.

Five-mile heavy-weight championship.—Clifford Earp, 100 h. p. Napier, first; Joe Downey, 90 h. p. Mercedes, second. Times, 2:56 and 3:29½. Also ran—Lancia, 110 h. p. Fiat, and Fletcher, 110 h. p. Fiat.

Five-mile middle-weight championship—Emanuel Cedrino, 24 h. p. Fiat, first; D. D. Holmes, 50 h. p. Wayne, second. Times, 3:53⅗ and 5:46.

Ormond, Florida, Jan. 22.—Somehow the preliminary "breathers" at Ormond this year have been far less interesting than in 1905. The Stanley steamer has been cutting an unofficial swath, but the gasolene cars have been laying low. In fact, the fool kite, commonly called an aero-plane has attracted more attention than all the motors. Air navigation, in a simple form, at least, is clearly to be a part of the winter program along the East Coast hereafter.

At this writing it seems certain that the new Richard-Sartori car of Alfred Vanderbilt's will cut no sort of figure in the speed meeting, whatever it may be able to accomplish eventually. It arrived here late Saturday night and Sunday was towed a couple of miles up the beach. Its power, as arranged at present, is so great as to cause excessive vibration which fairly shakes the machine even into hard sand. Its weight, too, as has been rumored all along, is about 200 pounds over the limit, with nothing in sight that can be taken off. "Haste has made waste" in this instance, but it is very possible that ultimately this racer of giant power will accomplish wonders. Its long bonnet is the distinguishing feature. Time has foolishly been spent upon details of the finish, while vital parts of the mechanism have been so slighted as to put the vehicle at a serious disadvantage. Vanderbilt was a long time working his horses into the blue ribbon class and there is nothing to indicate that the story will be different when it comes to steeds of steel and aluminum.

Earp has been making fast time within a week in the Napier racer that came out so near the top of the gasolene cars last year, but as under McDonald the green flyer has a pesky habit of throwing its shoes at a critical moment. It lost a rear tire on Friday and another on Saturday while tearing along at a hundred mile pace. Lancia has not yet accomplished much with his 110 h. p. Fiat, owing to minor accidents, although he has demonstrated that he is the easiest, if not the most fearless driver of the lot. Emanuel Cedrino and the plucky Mrs. Cedrino, who rides almost side-saddle on the Junior, along with Henry W. Fletcher, George W. Young's chauffeur, have fairly been leading the Fiat team when it comes to smooth, regular work. Walter Christie has been having more hard luck with his own special racer, owing to defective cylinder castings which make his chances appear dubious. Henry Ford's Detroit racer did not reach here until so late that it has not yet had a chance to give an account of itself. H. L. Bowden and J. R. Harding, the two Bostonians, who with Alfred Vanderbilt, represent the society contingent, are not seriously in the struggle and so do not call for serious consideration. Whether the society contingent is out of Florida racing for good cannot be told for another year, but it certainly looks that way. A manufacturers' meeting will lack the flourish of a society affair, but it is likely to prove far more thrilling. With the first day's contest only a few hours away it looks as if Hemery, with the 200 h. p. Darracq, and the Stanley steamer, which to-day unofficially shaved the kilometer mark, in spite of a cracked cylinder, would prove the stellar attractions. The steamer is certainly the fastest thing ever seen here for short distances

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and gets away with even more readiness and ease than distinguished the famous Ross "tea kettle" of 1905. The beach has been in good condition for a week past and only good weather seems necessary to carry the annual race gathering of the Florida East Coast Association to success. But this Florida weather is fickle and furs may prove more comfortable than linen.

Ormond, Florida, Jan. 22.—Although Tourist Agent Stratton was aboard the Seaboard line's "automobile special" that left New York at noon on Sunday and did his utmost to make things agreeable, the passengers "had their troubles." There were about 75 of them, nearly all identified with the trade and fresh, or rather tired, from the New York Show. A cylinder head blew out near Fairfax, S. C., occasioning delay, and when the train reached St. Augustine the Flagler minions refused to let it run over the Flagler tracks to Ormond. It made a change of cars necessary. While the crowd growled, the growls were relieved by smiles at the misery of the "other fellow." Manager Kull, of the Wayne Automobile Co.'s New York agency, had to engage a special car on the Southern Railway for a Wayne party; it left New York 14 hours before the other train and reached here too late Monday night to make connections for Ormond.

While waiting at St. Augustine a fearful thunder storm prevailed, making it impossible to obtain food, of which there was not enough to go around in the railway restaurant. Everyone agreed that unless there are enough trains in future years, the Florida carnival at Ormond will see them no more.

Among those who came down on the Seaboard train were: A. L. Riker, W. D. Gash, A. G. Batchelder, J. C. Kerrison, W. H. Hoops, Jr. (Cadillac Co. of Chicago), W. J. Hart, Jas. Couzens, Peter Streenstrup, Benj. Briscoe, J. D. Maxwell, C. A. McQueston, John Van Benschoten, Herbert Githens, Frank L. G. Martin, George P. Tangeman, O. J. Mulford, John S. King and party of five, John M. Young and two, F. J. Regan, A. W. Church, Guy Vaughn, H. B. Joy, H. E. Dodge, E. H. Brandt, Mr. and Mrs. Henry Ford, Ed. Demar, E. W. Sutphen, A. J. Cooke, Oscar Lewisohn and H. S. Smith and wife.

Glidden Cup Route to be Changed.

It has been practically decided to make a change in the Glidden tour route as selected by the Cup Commission a short time ago. Numerous protests have come to the committee regarding the poor roads through Canada, and the Canadian section has been eliminated. Just what the exact route will now be has not been definitely determined, but the committee will meet within a short time to plan a more satisfactory trip. It had been decided to start from Buffalo, but this plan may also be altered.

A. C. A. AGAIN AT WALDORF

Five Hundred and Fifty Attend Annual Banquet—Novel Effects in Evidence.

In an atmosphere which suggested the perfume of a conservatory and in which there was not the slightest perceptible scent of gasolene, members of the Automobile Club of America and their guests, five hundred and fifty strong, sat down to the seventh annual banquet of that organization in the banquet hall of the Waldorf-Astoria Hotel, New York City, last Saturday night, 20th inst. The dinner and the speeches following were so long that many of the guests who started from Jersey City at midnight on the special train for the Florida races, had not time to divest themselves of dinner clothes.

The decorations were lavish and the committee on entertainment made good use of the generous appropriation set apart for this purpose. The great ball-room of the hotel was transformed into a veritable flower garden. Walls, pillars and columns had entirely disappeared under the banks and masses of forsythia, Southern smilax, Sybodian fern, potted palms and pine. From the topmost gallery to the floor and back of the guests' table were solid banks of the green decoration pierced with electric lights through which the American flag shone, surmounted by the insignia of the Automobile Club of America. In the two tiers of boxes extending around the balconies sat the feminine guests.

It was ten o'clock when the procession of the ices was started and there the apex of gorgeousness in banquets was reached. When the head of the long line of waiters rounded the screens that shut off the hall leading to the pantry room from the banquet hall, a big cheer went up, for the head waiter carried a red automobile two feet long and filled with ices. Then came other automobiles in many colors and sizes, horns, caps and goggles—in "life size." The piece de resistance was a large 1906 model car with a wonged female figure, typifying speed, standing in the tonneau. All over the hall were headlights freighted with ices. The menu cards were enclosed in a leather card case, with the club monogram on the outside and the name of the guest inside.

President and toastmaster Dave Hennen Morris was the first speaker. After strewing a few bouquets of thanks all around he touched upon the question of governmental support as regards automobile shows and races. Among other things he said:

"The King of England thinks it an honor to open an automobile show in London; his Imperial Majesty the German Emperor thinks it a great honor for him to do the same in Berlin; the French Republic takes pleasure in mobolizing 100,000 men to guard the course of the international race in France. We are now assuming proportions in America in regard to the development of the automobile which justifies us in hoping and in asking the national government and all the state governments to do something of the same kind in this country. I do not wish you to understand me as believing and advocating road racing. I think there is a very large element of danger in road racing, and I think every committee in every country which has had road racing feels the same way about it. The only safe and proper way is to have an automobile speedway, entirely safeguarded from any intrusion, and I hope that we shall soon see not only one but a dozen such speedways in the different states, East, West and South.

Mr. Morris introduced Alexander Graham Bell, who, however, spoke at length of aerial locomotion. Only once did he comment upon the rapid development of the motor vehicle. The eminent scientist won applause from the galleries when he compared the banquet hall as "a fairyland with the angels in the clouds." The other speakers were Henry D. Esterbrook, a lawyer, and Henry Duncan, a carriage manufacturer.

At the main table on President Morris's right, was Dr. Bell and on the left Colonel John Jacob Astor. To the right of Mr. Bell sat Henry M. Duncan, Jefferson Seligman, Henry C. Rouse, Colgate Hoyt, Milton J. Budlong and Samuel H. Valentine. To the left of Colonel Astor were Henry D. Esterbrook, William H. McElroy, General George Moore Smith, Winthrop E. Scaritt and John Brisben Walker.

Los Angeles Hill Climb in February.

Los Angeles, Cal., will have its hill climb, this having been decided at the last meeting of the Dealers' Association. Passadena Hill has been selected and the event set for February 22. Six classes are provided for, as follows: For runabouts costing less than $1,000; for runabouts costing less than $1,500; for all classes of runabouts; for touring cars costing less than $1,500; for touring cars costing less than $2,500 and for touring cars costing more than $2,500. All cars must carry loaded weight equal to their complement of passengers.

Austins Choose Their Officers.

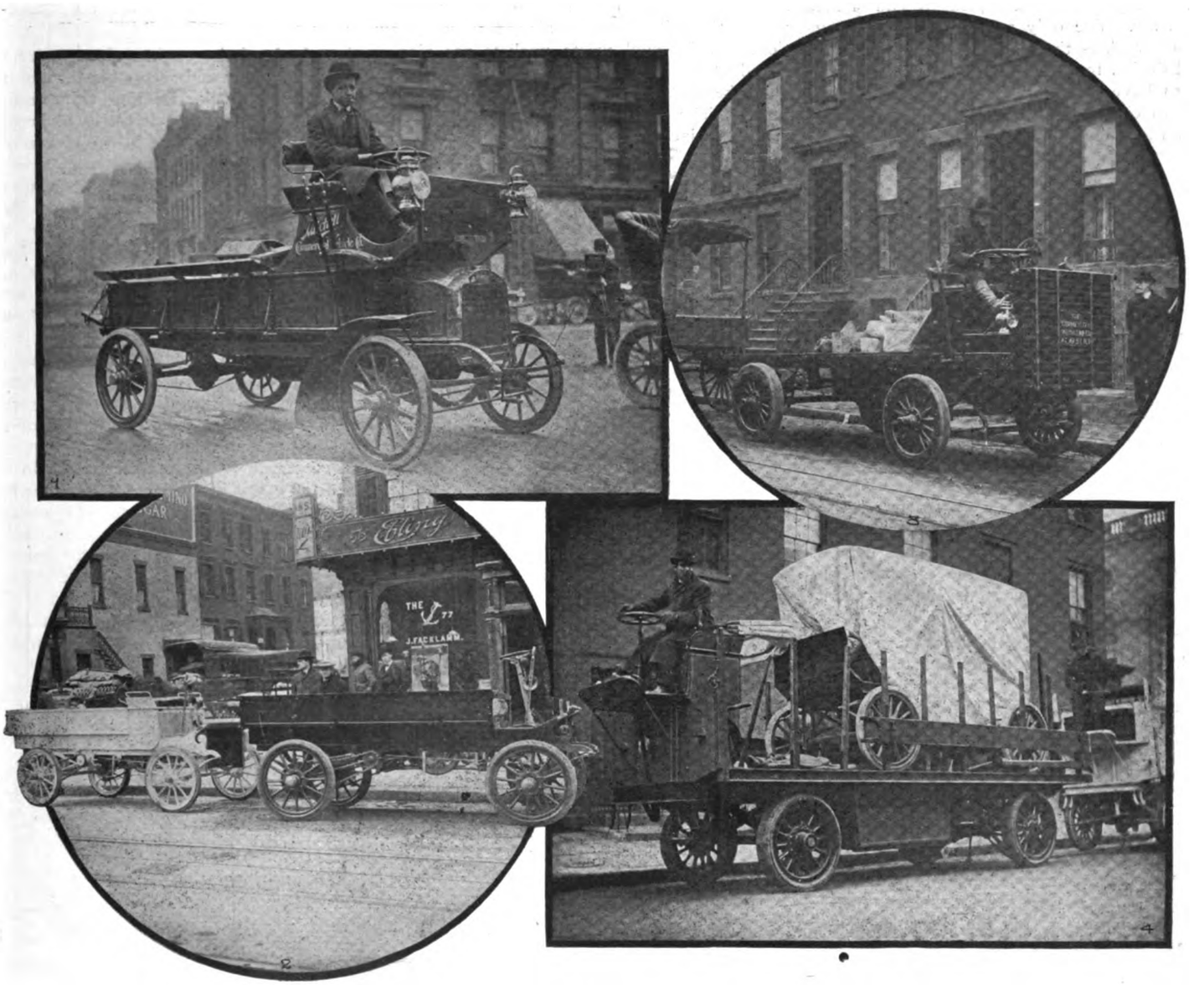
At the annual meeting of the Austin Automobile Club, of Chicago, Ill., these officers were elected: President, J. H. Francis; first vice-president, C. E. Ingalls; second vice-president, J. E. Plew; secretary, C. E. Westwood; treasurer, John S. Wayman; surgeon, Dr. M. B. McBirney.

Club Formed in Erie.

The Erie Auto Club, of Erie, Pa., has been organized with the following officers: President, F. H. Payne; secretary, H. N. Fleming; governors, F. H. Payne, Frederick Densmore, Dr. E. F. Gifford and H. N. Fleming.

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The Business Vehicles at the Shows



1. MITCHELL. 2. RAPIDS. 3. COMMERCIAL. 4. COLUMBIA.

Although during the automobile shows, the commercial vehicles attracted comparatively little attention, when the shows closed on Saturday night last, those vehicles demonstrated practically how great has been their progress and really gave an open air show of their own.

Never before were half so many motor wagons and trucks employed to cart away the cars and other goods that had been on exhibition. The vicinities of both Madison Square Garden and the 69th Regiment Armory—the latter in particular—were almost "alive" with them and hardly two of them were of the same type. It was probably the largest and most assorted gathering of commercial vehicles in practical use ever seen in New York.

In this connection one of the best and timeliest demonstrations of practicability was given before the show by the Knox trucks. Each of the Knox pleasure cars staged in the Garden had been loaded on a Knox truck at Springfield, Mass., and transported to New York over the common roads, and although the latter were in miserable shape, the mud being hub-deep in places, the journey of 140 miles was made without trouble.

The vehicles displayed at both shows indicate that the pleasure car is still their foundation. In fact, one or two were shown that are nothing more or less than pleasure cars having in place of a bonnet over the engine, an elevated seat such as is found on horse-drawn trucks and electrical trucks of established design.

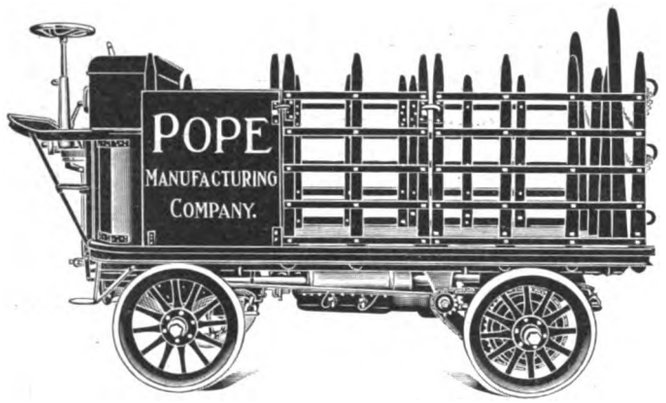
Take, for example, the Franklin light delivery wagon, one thousand pounds capacity. If the seat were stripped from it and the structure that goes to uphold the seat, a regular pleasure chassis would be left with the engine in the usual position for a pleasure vehicle.

And this comment is not in the nature of criticism, because there is no reason why this should not be so, but it will make plain to the one who has not seen the truck just how such a light delivery wagon is evolving from the pleasure type. The Mitchell light delivery wagon is another instance of the conversion of a pleasure vehicle into a commercial vehicle. The two-cylinder vertical engine and its transmission is applied to a running gear that is heavy enough to do the work on solid tires, the seat being mounted over and above where the bonnet usually is, in fact, some of the bonnet, as ordinarily used for pleasure cars, is in evidence.

As a contrast with this gradual evolution from the pleasure to the commercial motor car, the Pope-Hartford 2500-pound capacity

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motor truck serves as an example. It was shown for the first time at the Garden. This truck has been built from beginning to end regardless of the pleasure end of the industry. The only relation it has to any other truck is that of resemblance in style and design to the horse drawn truck. Features have been retained that seem essential to either horse or motor drawn truck. Yet the efficiency of the mechanical design



POPE—HARTFORD GASOLENE TRUCK.

has not been sacrificed. There has been a very happy blending of the essential features of a good truck as we understand it to-day and a good motor vehicle.

This truck is worthy of description in detail. As stated, its capacity is 2500 pounds, but the proportions of the truck are such that there is no doubt but what a much greater load could be safely carried and have the ill effects felt by the tires only. The seat is high in front, very nearly as found in the best electric trucks of large capacity. The axles and wheels are heavy, the wheel bearings rolling on Timken roller bearings. Although the weight of the truck is 5500 pounds, it moves with a slight push on a smooth surface. The frame of the truck is of the best accepted form—4-inch beam, I beams with wooden cross members, all mounted on regulation truck springs.

The motive power is a two-cylinder opposed engine horizontally placed crosswise on the truck, so that the crank shaft of the engine is in line the length of the truck. The motor is hung on a subframe built for the purpose and hanging from it by four bolts, the removal of which permits the lowering of the motor free of the truck altogether and replacing it with another in case of temporary disablement or in case repairs become necessary. This is a particularly good feature in any commercial car. The motor consists of two 5½ x 4½ inch cylinders with all valves mechanically operated. The ignition is by high tension current and spark plugs, the current being furnished by dry batteries, 20 in number, coupled in series of multiples of four. With this system of supply for ignition purposes no thought need be given to the batteries for four or five months at a time if they are kept dry.

The lubrication of the engine has been given a great deal of attention. Wool waste boxes surround the main bearings, a system has been found to give the best results in connection with the electric truck proposition; it requiring almost no attention. Little wool waste pockets are also found at the top side of the cylinders, so that the piston rubs on them at every stroke. The oil in these wool waste pock ets is replaced continuously by a tank situated high up under the seat and having plenty of gravity flow, and also having pressure from the crank case as an additional force for insuring constant oiling. The cranks in revolving pick up oil with scoops from the crank case, each having its own pocket to collect the oil.

The cooling system requires no pumping, the water circulating by thermo-siphon to a large coiled pipe radiator with corrugated fins located under the footboard and covering nearly the entire front of the truck below the footboard. Naturally circulation to this radiator will be very rapid and thorough, all pipe connections being large and the bends easy. The elevation of the radiator gives a strong natural current.

The gasolene supply tank is up under the seat and of 24 gallons capacity, surely enough to run all day long without replenishment. The commutator is attached to the front side of the engine within easy reach from the front of the truck and of the Pope-Toledo type.

Just back of the engine, close under the floor of the body and accessible through the floor of the truck, is the transmission, which is a feature and is likely to become a very prominent feature in the commercial truck. It is a new adaptation of a series of magnetic clutches. With four speeds ahead and a reverse and all gears in mesh all the time and magnetic clutches for each gear, the combination is controlled by a lever exactly as an electric truck is controlled. The power to operate these magnets is furnished by a small General Electric motor driven through a shaft leading from the transmission and kept at a constant speed by the governor. This current is carried to the controller and by the controller returned at will to any one of the six clutches within the transmission.

Some three of these clutches are in use when the car is in motion and in order that there shall be no drag to the residual magnetism in changing from one gear to another, the magnets are so arranged that when a change is made from one gear to another the application of a magnet to a new gear positively removes the magnet from contact with the gear last in use.



CHAMPION—McCREA ELECTRIC TRUCK.

This whole combination runs in oil and will require no attention whatever.

By means of bevel gears the sprocket shaft is driven, carrying a sprocket at either end and by chains to the hub of each of the rear wheels.

The brakes are of the internal expanding type on the hubs of the rear wheels, being applied by foot lever sticking up through the footboard.

There are two levers on top of the steering wheel, one controlling the ignition and the other the throttle, no governor being used. By a small foot pedal resistance is

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AFTER THE SHOW WAS OVER.

thrown into the magnetic field making possible the slip of the clutches, delicate, careful and slow movement of the truck being thus rendered possible.

The steering mechanism is very powerful, of very generous proportions, the motion being transmitted from the footboard by levers to the rear of the engine and thence to the steering knuckles.

Description of the Knox commercial wagon seems somewhat superfluous as it is so well known and so largely used in a certain field of operation.

The form of engine used by the Knox people is their regular two-cylinder, air-cooled, opposed under the body, the crank shaft at right angles to the length of the body, the same as has been in use on their other vehicles for some years. It lends itself particularly well to medium weight truck work in the arrangement of its parts. The control is exceedingly simple, in fact the whole motor is simple.

The transmission is of the planetary system and is also simple and adapted to the work for which the Knox truck is built.

The different forms of body supplied with the Knox trucks are numerous; light delivery wagons, open express wagons and finally and not the least important, large passenger wagons seating from fifteen to thirty. Most of these forms are very familiar sights about the streets of our large cities and have all become a factor in delivery service for dry goods houses and provision dealers, not to mention express companies and similar uses.

In the Olds commercial exhibit was found light delivery wagons especially built for business purposes and well considered. The motor is of the two-cylinder vertical type, under the seat with crank shaft across the chasm, the power being transmitted from the crank shaft to the engine by means of a Morse silent chain to a countershaft two or three feet towards the rear axle, the countershaft being parallel with the rear axle. On this countershaft is found the planetary transmission system transmitting its power to the rear axle by double chain. The transmission gives two speeds ahead and reverse.

The motor is water cooled with a radiator in front under the footboard, circulating the cooling liquid by means of a pump.

Some of the other details in connection with the wagon are as follows: The cranks are set at 180 degrees, therefore balancing well and easily. The motor is 5 x 5 inches in dimensions, and is so geared as to give the wagon a maximum speed of 18 miles per hour. The gasolene is high above the motor in a tank at the rear of the dash, just over the footboard. The lubrication is supplied by force feed from individual pumps to each point of lubrication. The battery consists of dry cells, also storage battery. The ignition is high tension through spark-plugs. The means for starting guards against accident because of advanced spark. Before the crank can be attached a sector with a hole in it must be moved into a given position, which retards the spark and releases the compression. As soon as the crank is withdrawn the spark returns to any point where it may have been left and the compression becomes full and operative. This makes starting exceedingly easy and safe, no matter how careless the operator may be.

There are two types of trucks furnished by the Olds works, one heavier than described, geared to only 12½ miles an hour. It is furnished with the same motor and transmission, the gearing and running gear being changed to suit the increased weight.

The Packard Motor Car Company exhibited several trucks equipped with a two-cylinder vertical motor, sliding gear transmission and other details resembling those of the Packard touring car, the chassis and running gear being, however, built solid

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and heavy, and well adapted for the intended purpose.

The Hewitt Motor Company exhibited a very heavy and strongly constructed three-ton truck and a light one thousand pound delivery wagon.

The large Hewitt truck is supplied with the now familiar type of marine, four-cylinder gas engine with open cranks, which is lubricated by a gear pump of special design, forcing oil to every bearing in positive quantities.

The power is transmitted from the engine to a transmission of the planetary type, but of special design, peculiar to the Hewitt design, and through the transmission to the shaft and cardan and universal joints of massive size to the sprocket-shaft and double chains to the rear wheels.

wagons. The product of this company also is widely known in all the larger cities. Their large five-ton truck has an auxiliary hoisting plant under the front seat, making it a most valuable machine for heavy trucking of large machinery that has to be hoisted. The running gear of the equipment supplied by this company is peculiar in the fact that full elliptical springs are used on both front and rear axles, and that a thrust pedestal is necessarily supplied to guide the axles and keep the springs in their proper position. Solid rubber tires are used on all these electric wagons and trucks without exception. On some of its trucks the Vehicle Equipment Co. employs the spur gear drive and on others the chain drive, in accordance with the type of wagon.

and exhaust mechanically operated. The motor shows 24 horse-power at 800 revolutions per minute.

The truck rolls upon large Timken roller bearings, heavy wheels and solid rubber tires. Eight dry cells furnish the electricity for jump spark ignition. In the matter of control, a new feature is introduced in the fact that the ignition is retarded upon the application of the brakes. The power between motor and axle is transmitted by a leather-faced cone clutch upon one end of the crank, the fly-wheel being on the other end.

A large part of one side of the wide main entrance of the Armory was monopolized by the Iroquois gasolene sight-seeing 'bus, the very massiveness of which did not permit it to be overlooked. This is a ponder-



THE KNOX TRUCKS LOADED WITH THE KNOX SHOW CARS.

The rear tires are of the double type and mounted on exceedingly strong wheels. The control is all worked by foot and is of an interlocking kind. If it is attempted to apply any one gear, it can not be done without releasing the gear already in use, thus absolutely preventing the crossing of gears. Ignition is supplied by a low tension magneto with make and break spark.

The light delivery wagon is driven by a single cylinder motor under the body with ignition from high tension magneto, and the power transmitted through a planetary gear system to the rear axle by a chain. The same foot control with safety device is used.

A full line of electric trucks was shown by the Pope-Waverly factory in sizes from one thousand pounds up to three tons. A line covering the whole range of demand for delivery purposes.

The Electric Vehicle Company staged a line of electric trucks and wagons, from one thousand pounds capacity up to 1, 2, 3 and 5 tons capacity, this last size not being shown, however. The product of this company is so well known that description is scarcely necessary.

The Vehicle Equipment Company displayed a full line of electric trucks and

The Atlas truck of three tons capacity, which was shown in the Armory, is massive in the extreme. The motor arrangement is totally unlike anything else to be found at the present time. It consists of a pair of twin cylinders horizontal with the heads pointing forward. On the crank shaft is a gear driving to the countershaft with a reduction of about five to one. The gears on this countershaft mesh with gears on the axle, all of the spur type.

The change gear mechanism is of the sliding kind with three speeds ahead and reverse, the gears being tremendous in size and yet operating freely when manipulated by the change lever at the right hand side of the operator.

The motor is hung upon a sub-frame supported at the front end by a trunnion carrying the load upward by means of a heavy forging to the body and thereby bringing the weight on the front end of the sub-frame and on to the springs and independent of the front axle in front, the rear end of the sub-frame being upon the rear axle.

A large radiator is under the center of the body, also supported on this sub-frame. Some of the details of the motor comprise a piston oil pump, inlet valves

ous specimen of construction in every respect and serves as an illustration of what the gasolene motor is capable. It is the product of the Iroquois Iron Works and is designed throughout in a manner that argues well for its durability in the hands of drivers accustomed to handling heavy trucks with horses. The engine is of the standard four-cylinder vertical pattern, placed tandem, the final drive being by side chains. It is in brief a very much enlarged edition of the touring car type, except that the motor is mounted much higher than usual owing to the requirements of the frame. It should give an excellent account of itself.

Shunted off into one of the cell like compartments that subdivided the basement into a bewildering maze, were the trucks of the Rapid Motor Vehicle Co. This firm's exhibit comprised a large 'bus in addition to one and one and a half ton wagons, all employing the two-cylinder horizontal opposed engine as motive power—a type well adapted to this class of work. The same firm also exhibited a delivery wagon body without chassis.

The Logan Construction Co. exhibited quite an array of commercial wagons, ranging from the light delivery wagon up. These,

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including a medium capacity platform truck and a heavy delivery wagon, were all equipped with the standard Logan chassis, consisting of two-cylinder horizontal opposed motors with a planetary gear on the light wagon and a two-speed sliding gear on the heavier types. In addition to other improvements made on this line of vehicles, the heavier sizes embody the Logan truss frame—a light and powerful type of construction that should form an ample guarantee against trouble in this direction.

The Crown light delivery wagon, which was a neat specimen of the wagon builder's art that bore such a close resemblance to the standard horse-driven type that it seemed as if only the shafts were missing, was installed in another corner of the basement. It is the product of the Detroit Auto Vehicle Co., and incorporates the friction drive exploited by this firm. A feature of the latter lies in its giving direct through drive on the high speed when the friction surfaces are idle and out of engagement. Another exhibitor in the basement was the Pittsburg Electric Vehicle Co., which had the trouble of bringing the major part of its exhibit on from Pittsburg only to be compelled to ship it back again without being able to show it, as the runway to the basement did not permit its entrance. Their exhibit was confined in consequence to a single electric delivery wagon of 800 pounds capacity.

The Auto-Car Equipment staged an electric hotel 'bus which was promptly bought up by an Atlantic City boniface.

Eisenhuth Creditors Again Make Trouble.

It appears that the attachments levied on the Eisenhuth Horseless Vehicle Co.'s Compound cars, which were intercepted while en route from the factory at Middletown, Conn., to the New York Show, also included everything in the factory, in which keepers were installed.

The actions were brought by Mary James and Marian J. Read, both of Brooklyn, N. Y. The former seeks to recover $100,000, and the latter $50,000, money which they claim was borrowed on notes by the company. The proceedings brought out that I. E. Gates, of New York City, is president of the Eisenhuth company.

The suit is returnable to the superior court of Middlesex county the first Thursday in February.

New Company to Build Big Cars.

The Huntingdon Automobile Co., has leased the Underhill Building, in Huntington, L. I., and is making ready to produce six-cylinder touring cars. August Heckscher, of the zinc trust, is said to be largely interested in the company, of which Ralph P. Kinney, of Cleveland, O., is president; F. A. Berthold, of New York, secretary and treasurer, and J. J. MacMulkin, superintendent. The latter previously was connected with the Mercedes establishment and so "knows his book."

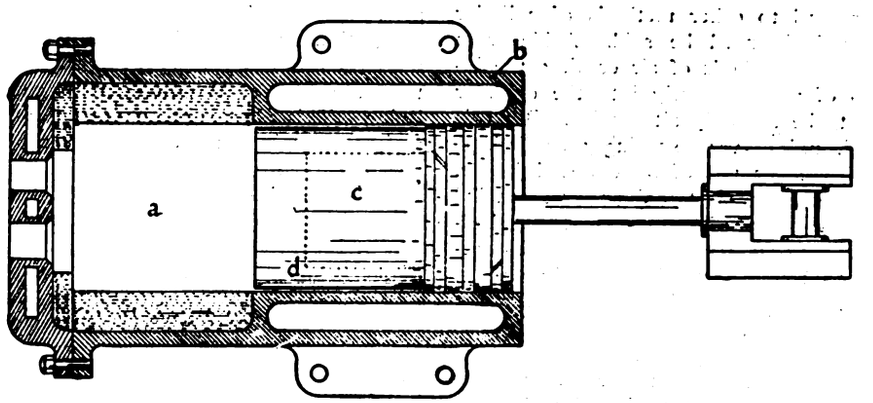
NEW SYSTEM OF COOLING

Radical Departure Suggested and Explained —Advantages Claimed for it.

It is a matter of common observation in gas-engine practice, that an air-cooled cylinder will develop somewhat more power, than could be secured from a water-jacketed motor of equal size, and under otherwise equivalent conditions, says S. M. Howell in the Scientific American. In other words, the engine without water cooling is the superior in point of economical performance. This experience agrees perfectly with the well-known simple theory upon which the production of power is dependent in all forms of the internal-combustion motor.

The gas engine is a heat motor, pure and simple, producing power solely by the development and conservation of a high degree of heat. The working fluid is a mixture of air and certain inflammable gases, and the whole is violently expanded by the instantaneous burning of the contained gas and the intense heat thus generated. It must follow, therefore, that a water jacket or any device which operates to dissipate the heat of combustion, prior to the moment of exhaust, will also lower the pressure and curtail the power of the engine in a corresponding degree. In the case of the water-jacketed engine, the cylinder walls have a comparatively low temperature and rapidly abstract heat from the burning charge, thereby reducing the pressure and diminishing the power of the stroke. But the so-called air-cooled engine, having a much higher temperature, will therefore, develop a higher pressure, and for a time at least, or until the cylinder becomes excessively hot, will produce more power. The amount of heat lost through the walls of a gas-engine cylinder by the use of a water-jacket varies with the conditions. A high piston speed and high compression are factors which have a marked effect in reducing this loss; for the reason that in such cases the cylinder is smaller than would otherwise be required to develop the same power. This reduces the extent of water-cooled surface with which the ignited gases are in contact; and also, by reason of the quicker stroke, shortens the time of such contact.

The amount of heat absorbed by a water-jacket may readily be determined in any given case by a simple calorimetric test of the water used, taking note of its volume, and its temperature as it enters and as it leaves the jacket. But I have observed, in making experiments of this kind, that the figured result does not always account for the deficiency which exists in the power of the engine, as compared with the heat which should theoretically be developed, and that too after making allowance for all other apparent losses. In explanation of this it may be urged that the full temperature and the total amount of heat generated by the complete burning of the fuel, is not, in the case of a gas-engine cylinder, fully developed. The combustion is more or less imperfect by reason of contact with an extended metallic surface at at a comparatively low temperature. If this is true, then we have also an indirect loss caused by incomplete combustion, and chargeable to the use of water cooling.



The hydro-carbon liquids or gases, which are the usual fuel of gas engines, consist essentially of hydrogen and carbon. The hydrogen is readily inflammable, and under ordinary circumstances is capable of but one reaction, resulting in the formation of the vapor of water. The elastic force of this vapor, powerfully compressed within the confines of the cylinder by the heat of combustion, forms a large part of the working fluid on the pressure of which the piston is driven. The trouble would seem to arise from a deficiency in the burning of the carbon burning element. Carbon in burning may form either of two combinations—carbon dioxide or carbon monoxide. The former is always the result under fairly favorable conditions, but in some cases, notably those in which the flame is confined within narrow limits and in close contact with metallic surfaces, the heat is so rapidly withdrawn that the temperature falls, and the process degenerates into incomplete union with the oxygen of the air, and the formation of carbon monoxide, the difference being that the amount of heat liberated by this degenerate reaction is less than

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one-third that which would result from perfect combustion of the carbon and the formation of carbon dioxide. A familiar instance of this defective form of combustion is seen in the attempt to pass a gas flame through a sheet of gauze or cloth made of fine metallic wires, or to conduct a flame through small metal tubes. In these cases, the cross-sectional area of the passages is very small, and the extent of cold metal comparatively large, with the result that the temperature falls below the kindling point, and the flame is extinguished or reduced to the monoxide reaction described above. That these instances have a parallel in the conditions which exist in gas engine practice, seems probable. It is obvious, however, that such an effect must be more marked in the case of small engines than in those having large cylinders, and could easily be determined in any case by a careful analysis of the exhaust.

In regard to other methods of cylinder cooling, little need be said. Aside from the various methods of air cooling, the injection of water directly into the cylinder seems to be the only alternative. But this method, unless very sparingly applied, is worse than the use of an external jacket. It was one of the first cooling systems tried in the early days of the gas engine; and although modern designers sometimes attempt to revive it, is has usually proven unsatisfactory. This is evidently for the reason that the water in direct contact with the burning charge must greatly modify its temperature, while the cylinder walls would be only indirectly affected, and might still be insufficiently cooled. Then, too, the introduction of too large an amount of water into the cylinder of a gas engine, resulting, of course, in the immediate production of a body of steam, antagonizes combustion, and renders the ignition more difficult, and in the case of a four-cycle engine, has a tendency to destroy the vacuum produced by the retreat of the piston, filling the cylinder with steam on the suction stroke, and thus interfering with the inspiration of the charge. And still it is true that a small quantity of water, if properly regulated, may be injected into the cylinder of an air-cooled motor with much advantage. In this case it moderates the excessive heat of the contact surfaces, and assists lubrication by saponifying the oil and loosening any carbon deposit, which may otherwise adhere to the cylinder walls.

But after demonstrating the disadvantages of water cooling, the fact still remains that red-hot metal surfaces can not be continuously worked under heavy pressure in air-tight contact. Some means must be adopted whereby the destructive effects of heat on the cylinder and piston may be obviated. Thus it seems that in the present state of the art, the efforts of the gas engine designer are opposed by a conflict of natural conditions, and that he must so construct his engine that durability will be secured at the sacrifice of economy.

In the figure which accompanies this article there is shown the high-pressure cylinder and piston which has for its object the utilization of the greatest possible amount of available heat in a cheap liquid fuel, viz., crude or partly refined mineral oil. It may be noticed that this cylinder consists of two external parts, viz., the combustion chamber a, the internal walls of which are protected from the heat by a lining of refractory material, indicated by the dotted surfaces; b is the cylinder proper, wherein the piston and rings work in air-tight contact. This part of the cylinder is water-jacketed in the usual manner. The admission and exhaust valves are located in the head of the combustion chamber, this member being also partly jacketed to protect the valves. The piston c is of the elongated type, that is, of somewhat more than the usual length, and having the rings near the forward or open end, the other end being covered by a thick cap d, of the above-mentioned refractory material. The elongation or extended part of the piston, with its refractory cap, is slightly smaller than the bore of the combustion chamber lining. This allows the elongated part to reciprocate within the combustion chamber, and to effect the necessary displacement without actual contact. Leakage past the piston is stopped by the rings at the opposite end which works within the cool part of the cylinder proper. The exhaust passes into a second and larger cylinder on the same shaft, where it delivers its remaining power in the well-known manner common to all compound engines. The cycle may be either two or four, but in either case, pure air alone will be admitted on the charging stroke. This air is compressed on the return stroke to a very high degree—300 to 500 pounds per square inch. The oil begins to enter (forced in by a pump) at the commencement of the power stroke, and without the use of any igniting device whatever, is instantly fired by the heat of compression, maintaining the required pressure throughout the stroke, in the manner of those engines which operate upon the well-known continuous combustion system.

A gas engine constructed upon these lines would possess the following advantages: It would be perfectly adapted to the use of the cheapest liquid fuel known. The injurious effects of heat upon the working faces of the cylinder and piston would be avoided. The losses incident to the use of the water jacket would be totally eliminated. The conflicting requirements encountered in the present methods of design would be obviated. The engine would be as durable as any other, and its thermal efficiency would be the highest possible in a heat motor.

Concerning the advantages of compounding, it should be observed that the exhaust from an engine operating upon the above system has a very high pressure (100 pounds per square inch) and the gain by this means would therefore be considerable.

Regarding the character of this proposition for a new gas engine, it is virtually a composition of at least three expired patents, and its value therefore does not consist in the novelty of its elements, but in the peculiarity of their combination. Certain other known devices might also be involved in its final construction, but this would depend upon the mechanical details of the arrangement by which the oil was delivered to the cylinder, rather than to the operative principle of the engine.

The temperature of the linings and piston cap—owing to the constant inspiration of fresh air through the inlet valve—would never exceed a dull red heat, and the valves would not become much hotter than is ordinarily the case in any gas engine.

The drawing shows the piston at the extreme end of its outward stroke, the length of which is in this case, about equal to the cylinder bore.

It is not essential that the compression pressure should be as high as 500 lbs. (mentioned above), as the charge would be self-igniting at a point considerably below this figure.

The Coming of Springs.

Dr. R. Lovell Edgeworth, an old time writer, writing in the year 1678, wrote an essay on the construction of roads and carriages, which appeared in a printed form in 1817 brought out by a London publisher, says the Carriage Monthly. The writer demonstrated that springs were as advantageous to the horse as to the passengers and he built a vehicle for the society of English arts and manufacturers, which awarded him three gold medals for his success. In this conveyance the axle trees were divided and the motion of each wheel was relieved by a spring. During the 18th century 12 patents were taken out for springs.

A subsequent writer, a Mr. Thrupp, in his History of Coaches, says "that under springs were invented in 1818 by a Mr. Windus with a view of easier riding and to afford greater relief to the under carriage from direct concussion." The elliptic spring was invented by Obadiah Elliott in 1805. For this improvement he received a gold medal from the Society of Arts. The elliptic plates were almost straight and were conected by a shackle coupling at each end.

The drawing accompanying the patent specifications shows two plates only, but the specifications provided for more if necessary. The patentee said his invention consisted in building any four wheeled carriage without a perch or crane. As soon as the invention proved to be all that was claimed for it, the construction of heavy C springs declined. C springs were again revived in the '60's, but since 1870 they have been on the decline and have almost ceased to be made for two and four wheeled carriages. The invention of the elliptic spring has influenced carriage building and, in time the design of the automobile, more than any other invention in that department.

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HUDDY TALKS OF LAWS

"Too Much Horse Sense in Most of Them," he Says—Subject Well Handled.

"One of the most interesting things connected with automobiling is the legal status of the motor car on the highway," said Winthrop E. Scarrit, in introducing Xenophon P. Huddy, who delivered a lecture on "The Legal Aspect of Motoring," before the Automobile Club of America, on Tuesday evening, last. "We know that the horse was here a thousand years ago," he continued, "but the automobile will be here a thousand years after the horse has gone."

Prof. Huddy confessed to an utter lack of knowledge regarding the automobile itself and also held himself willing to correct his legal knowledge of it, should any of his audience think fit.

"It is hardly necessary to mention that the automobile constitutes personal property and the fact that it is property, affords to its owner protection from legislative and official oppression," he said. "Speaking generally, the automobile is a vehicle and it is to be classified with other vehicles such as the carriage and the street car. The highest courts of several States, in considering that the automobile is propelled by a power within itself, is of unusual shape and form, capable of high speed and produces more or less puffing, have declared that these features make such a horseless vehicle a source of danger to pedestrians and persons in horse-drawn vehicles.

"It is particularly noticeable, however, that up to the present time, no court has decided or stated that the automobile itself is a dangerous machine. Whatever language the courts have used, apparently condemning motoring, has been directed against the careless or reckless chauffeur or operator—not against the machine. One who operates an automobile should possess something more than expert knowledge of the machine's construction, or the best mode of operating to obtain the highest speed. The hazard to which the safety of pedestrians and persons with horses may be exposed, results from the personal part played in motoring, rather than from the nature of the vehicle. It is evident, therefore, that the manner of driving the machine and that alone, threatens the safety of the public.

"It cannot be disputed that the false notion that the automobile is a dangerous machine has no standing and that it is the liability of dangerous operation that is at the foundation of all the present adverse automobile legislation. Eliminate the liability and a good part of the enactments on the statute books of the various States must fall. The motor, in addition to its other advantages, is the most sanitary vehicle that travels the streets, yet it is subjected to the most rigid legislative regulations—all because of the so-called dangerous element in automobiling.

"In almost every legal controversy there is a question as to the significance of words, so also the language of legislative enactments is often the cause of litigation. The automobile or "self moving" carriage has not yet been judicially defined, though many of the courts have attempted to describe the motor car. The only definition extant appears to be that of a law dictionary which states that the term means "all motor traction vehicles capable of being propelled on ordinary roads." Many of the automobile acts expressly define the terms automobile and motor car and it is quite generally provided that the terms shall include all vehicles propelled by power other than muscular, excepting, of course, motor vehicles running on tracks and steam rollers. But it has been emphatically laid down that an automobile is a carriage. It has also been announced that the courts will assume judicial knowledge of the motor and its characteristics, power of speed and the consequences of its use.

"In the District of Columbia, it has been held that a statute imposing a tax upon proprietors of hacks, cabs, omnibuses and other vehicles for the transportation of passengers for hire, did not include an electric automobile, as such was not known nor in use when the law was passed. In Pennsylvania there is a decision in apaprent conflict with this case.

"Turning to the rights of the motor car on the public highways, we must bear in mind that the purposes of the public ways contemplate all lawful means of transportation. The use to which the public way may be put comprehends all modern means of carrying, including the motor car. A recent Indiana case correctly states that 'in all human activities the law keeps up with improvements and progress brought about by discovery and invention, and if the introduction of a new contrivance for transportation, conducted with due care, is made with inconvenience and even incidental injury to those using the ordinary modes, there can be no recovery, provided the contrivance is compatible with the general use and safety of the road. It is, therefore, the adaptation and the use, rather than the form or kind of contrivance that concerns the courts.'

"The rights of the automobile on the public ways are equal to the rights of the pedestrians and horse drawn vehicles. This has been judicially declared a number of times by various courts in the United States. But it seems according to a Pennsylvania decision that a turnpike company has the power to exclude motor vehicles from its road because of the danger caused by their use.

"Owing to the alleged dangerous element of motoring, many of the State legislatures have passed enactments requiring the registration of motor vehicles and the licensing of owners or operators. This, of course, the State has authority to do under its police power, which authorizes it to enact laws for the safety and general welfare of the people, provided that the legislation does not transcend the provisions of the State or Federal constitution. A license to operate an automobile is merely a privilege; it is not a contract and may be revoked for cause. And the license is only a protection within the jurisdiction of the authorities granting it, though this rule is inapplicable where non-resident licensed operators are made exempt by statute.

"Many interesting test cases in reference to automobile legislation have been decided. As a general rule the regulations have been upheld by the courts where the contention was against their constitutionality on the ground of class or special legislation, discriminating against motor cars and placing upon them restrictions and burdens not imposed upon other vehicles. Not only is it necessary that people generally should be educated to appreciate the automobile, but some of our legislators and judges need a little 'automobile sense' drummed into and much 'horse sense' drummed out of their heads. We have a horse-crazy court in California which recently distinguished itself by protecting the farmer traveling at night. The Board of County Supervisors of Marin County, Cal., passed an ordinance providing that 'No person shall run an automobile on any highway of Marin County between the hours of sunset of any day and of sunrise of the day following.' A violation was made punishable by fine and imprisonment.

"A gentleman prisoner convicted under this law, not wishing to remain in prison, brought habeas corpus proceedings, claiming that the ordinance was unconstitutional and his incarceration therefore illegal. The Supreme Court of California, however, in the administration of its 'horse sense' law, decided that the ordinance constituted a reasonable and valid regulation. It is interesting to note what the court said in this case: 'If the use of the automobile gradually becomes more common, there may come a time when an ordinance like the one here in question would be unreasonable.'

"California is not the only State that has contributed rich legal literature in the form of judicial utterances concerning motoring. An automobilist was fined $25 for exceeding the speed limit in Columbus, Ohio, the statute prohibiting more than 7 miles an hour. The contention was that the ordinance discriminated against the motorist, because the street cars were allowed to run faster. The court held such discrimination proper because the street cars are confined to their tracks and can easily be avoided, whereas automobiles have no certain course and are, on that account, more dangerous to the pedestrian.' The absurdity of the proposition is apparent on its face, and it does not take a lawyer to discover its fallacy.

"How soothing to the motorist as compared with the instances just mentioned, is

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the judicial utterance of the Appellate Court of Illinois, which held that Chicago had no power to require by ordinance the taking out of a license, examination and payment of a license fee. In this case an injunction was granted prohibiting the city authorities from enforcing the regulation. This is the strongest case decided in this country, but with fairness to all concerned, I believe that the principle of this decision is wrong. The law making power of a State or municipality, undoubtedly has the power to require the registering and licensing of motor vehicles.

"An important part of the legal aspect of motoring surrounds the chauffeur. The term in legal significance may be said to mean any person operating a motor vehicle as a mechanic, employe, or for hire. This is the specification of the New York act as well as those of other States. The relation is that of master and servant, to which attaches all the rights and liabilities connected therewith regardless of the form of employment.

"The statutory requirements are not all the operator must understand. The courts have commenced to lay down rules in reference to operating motor vehicles and these are as binding as legislative regulations. An instance of this in New York is the decision that the motorist is obliged to stop when passing a fractious horse whether a signal be given or not. The duty to stop under such circumstances is independent of statute and it has been expressly so held by the Illinois courts as well as those of other States. Nor is the operator exempt from liability for a collision merely by showing that he was not exceeding the legal limit at the time.

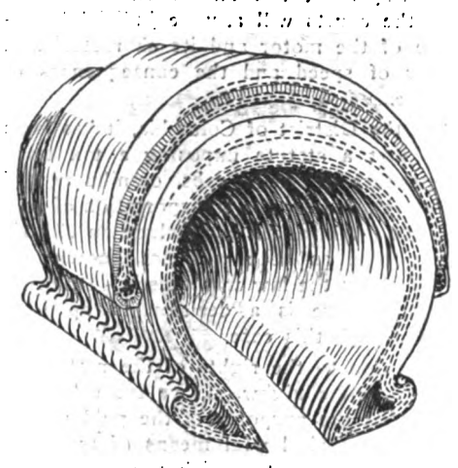
"The law, however, is not all against the automobilist and in favor of others. If he has complied with the law, his rights on the road are equal to those of all others. He has the right to assume and to act upon the assumption that every person he meets will also exercise the ordinary care and caution in leaving the machine unattended. It is not necessary, as stated in a New York case, to chain the machine or to fasten it to a post."

Prof. Huddy concluded with a lengthy comparison of the merits of the English "Light Locomotive Act" and the "Motor Car Act" which is an amendment of it, with American legislation, and to the detriment of the latter.

According to a recent cable report, Charles J. Glidden has completed his first section of the second instalment of his "several times around the world tour," by arriving at Calcutta. This first section comprised 4,405 miles as well as the longest automobile tour of India ever made. His total mileage is now 29,505. The next spot on the globe to be explored is Burmah, another fraction of the British Empire of about 175,000 square miles area, forming the northwestern part of the Siamese Peninsular.

Here's a Removable Tread.

Having reached the practical limit to which a tire tread may be built up without danger of disintregation through service on the road, the only available method of further protecting the tire from damage of any nature arising externally, would appear to be an auxiliary, or superimposed tread of similar construction, and this in effect is the principle followed by the Diamond Rubber Co., in the design of their new Burnham tire protector. There is little that can be said of its construction that does not apply to Diamond tires themselves, or for that matter to the automobile tire in general, for it is composed of several layers of rubber impregnated fabric surmounted by a thick layer of pure gum which is in turn covered with two strips of fabric and upon which the tread proper rests.



These various plies of material are accordingly vulcanized together in the same order as in the outer shoe itself, and with the exception of the foundation of fabric do not differe greatly in thickness from those of the latter. While slightly thicker at its outside edges which are reinforced with side wires surrounded by the layers of the fabric foundation, it cannot be said to embody anything in the nature of a bead. The method of fastening it purely constructive, the protector merely being slipped over the tire itself and while inflation naturally tends to make it grip tighter it is said that extended experiment has shown no tendency to creep even when deflated. The relative proportions of the tread as compared with those of the tire itself, as well as the manner of placing it will be clear at a glance from the accompanying sketch showing a section of each in perspective.

The Burnham tire protector will be supplied in four different treads; smooth, of the regulation Diamond wrapped tread construction as illustrated, with Bailey non-slip beads, Samson steel studded leather tread, or the Bar Traction tread, which consists of rubber bars extending diagonally across the face of the shoe and parallel with each other around its entire circumference. No prices have been made public as yet, but it is stated that the cost will approximate two-thirds that of a complete tire.

Mending a Spring Plate.

Some workmen doubt whether a broken spring plate can be welded and tempered and made as good as new. Blacksmiths question whether a broken spring plate can be made to stand the test of a new plate. The general conclusion is that it can be done by an experienced workman. The broken ends should be dovetailed, i. e., the ends should be split open half an inch and thinned down and placed on each other and then heated and welded. The heat should be as short as possible in order to not injure the temper in the other part of the plate. The parts should be hammered on the anvil until the united pieces become cold. Care should be taken not to permit the welded part to be hammered any lighter than the rest. If there is too much hammering it leaves a place where a break is liable to occur again.

Increase of Motor Cabs.

As has been the case in other cities so have automobile cabs become a necessity in Berlin since their introduction two or three years ago. They are in such strong demand that from 10 o'clock in the morning until 4 o'clock the next morning the three stands assigned to them in the metropolis are always almost vacant. Apart from the fact that the police authorities are about to sanction the establishment of new stands, the necessity of an increase in the number of Berlin cabs has been felt for a long time past, and has resulted in the formation of numerous cab companies. There are at present 140 of these licensed cabs in Berlin, and their number will be raised shortly to 270.

Direct Drive Discovered Again.

Probably the most interesting outcome of the agitation following the claim of a basic patent on the direct drive by Renault Freres, has been the uncovering of a steam car built by F. Lamplugh, an Englishman, in 1896. The original propeller shaft and back axle are still in use and not only embody the direct bevel gear drive on a balanced gear, but the propeller shaft has the usual universal joint at each end as well as a telescopic joint, thus making it in every respect as advanced a piece of construction as is employed to-day. The date of its origin anticipates the Renault patents by fully two years.

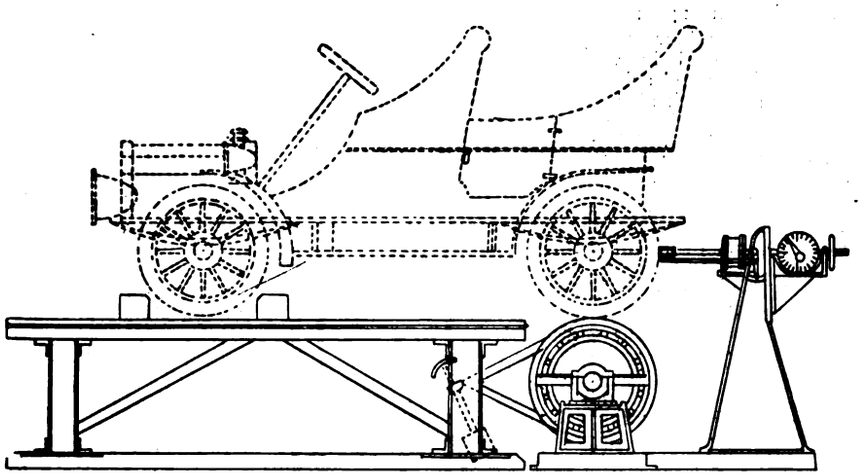
The Auto Mechanics' Club, an organization to provide a place for social entertainment for the men working at the automobile trade and for the study of the technical points and care of cars and to promote careful driving of autombiles, has been formed in Denver, Col. The officers elected for the first term are: President, E. S. Crawford; vice president, Lou Sanford; secretary and treasurer, L. E. Allmon.

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PURDUE'S TESTING PLANT

Methods and Machinery Used by the Western University in Trying-Out Cars.

Purdue University's much talked of automobile testing plant, which is a pioneer of its kind, has recently been completed and it is proposed during the present winter to determine the output of power under various conditions or running of a considerable number of typical machines. It is, of course, a part of the university property at Lafayette, Ind. The plant follows lines similar to those of Purdue's locomotive testing plant, the design having been worked out under the general direction of W. F. Goss, Dean of the Schools of Engineering.



As will be seen from the accompanying elevation, it constitutes a mechanism upon which any automobile of any type, whether steam, gasolene or electric, may be mounted and driven. When mounted for operation the driving wheels of the car are carried by the supporting wheels of the plant. The latter are mounted upon an axle revolving in fixed bearings. Thus set up, the car is then connected with the traction dynamometer shown just behind it and which serves to keep it from running away.

The energy developed by the machine is absorbed by a water cooled friction brake of the familiar Prony type, while a motor driven pressure blower delivers air through adjustable piping for cooling the radiators of steam and gasolene machines and a motor driven exhauster draws air from a point in close proximity to the exhaust of the machine, thereby freeing the laboratory from any noxious gases.

Concerning the theory of action, a glance at the illustration will make clear the fact that if the supporting wheels were blocked so that they could not turn, the car would, if started, tend to move forward with its full tractive power even to the extent of slipping its wheels on the supporting wheels. This tendency will, of course, be registered as a pull on the dynamometer. If, on the other hand, the supporting wheels are frictionless, then the turning of the wheels of the automobile by its motor will not result in any pull on the dynamometer, for if frictionless, the supporting wheel can offer no reaction for such a pull.

The supporting wheels are in fact neither blocked nor frictionless, but the design is to have them turn against a resistance the value of which may be varied at will. The arrangement is such that whatever this resistance may be it appears as a stress on the draw-bar. The resistance is regulated by means of a friction brake to which reference has already been made. By its adjustment the automobile may be made to pull little or much upon the dynamometer, that is, it may run under a light or a heavy load as may be desired. In all cases, the energy delivered by the automobile is the product of the pull exerted at the drawbar, into the distance passed over by the tread of the driving wheel. Thus, the horse-power delivered is equal to the pull on the dynamometer in pounds, multiplied by the space passed over in one minute by the automobile driving wheel, divided by 33,000. The space passed over is most conveniently found by determining the number of revolutions of the supporting wheel since the latter is of fixed diameter; that is, the determination is based upon the length of the path traveled, rather than by the revolution of the driver. This also provides means for determining transmission losses.

Thompson on Japanese Conditions.

J. W. Thompson, who has just returned to New York after a three years' residence in Japan, was the first man to introduce the motor car into the Mikado's Empire, having used an automobile there in 1900. He says the roads in Japan are excellent for automobiling, but that few, very few cars have been imported owing to the very high duty. His greatest difficulty was in teaching the natives the mechanical construction of the car so as to make them capable chauffeurs and repairers. He made straight for the Garden and invested in a 30-35 Locomobile before leaving.

RESOLUTIONS OF WELCOME

First Motor Car Due, a Mining Town Takes Official and Jocular Action.

Local automobile regulations have been a source of mingled anger and sorrow to users of cars ever since self-propelled vehicles came into use in this country. Out in Newberry, Mich., which is a small mining town in the upper peninsular of the Wolverine State, there is a village board of trustees who have not taken the advent of the automobile so seriously as have the city fathers of some larger places. So when a citizen of that place purchased an automobile, the first to be brought into the town, the trustees formulated the following regulations for its use:

"Whereas this village will soon be startled by an automobile under the charge of an unexperienced chauffeur, which said automobile has been fully warranted to shin telegraph poles, scale the sides of buildings, and climb fences with neatness and dispatch, and has a distinct and determined taste for human gore; and

"Whereas said automobile is a deadly weapon, dangerous to the good health, happiness and morals of the owner thereof; and

"Whereas it is the desire of this council that the children of the community shall retain certain fundamental privileges guaranteed to them by the Constitution of the United States, the Constitution of this State and the charter of the Village of Newberry, the most important of these being the right to live;

"Resolved, That the owner of said automobile be and is hereby instructed not to run said machine at a rate exceeding three miles an hour while in the village limits;

"Resolved, further, that all the provisions of the ordinance relative to pounds and impounding beasts be and the same are hereby extended to and include said automobile, and that the health officer be instructed to enforce all ordinances relative to nuisances and noxious smells.

"Resolved, That all parents be and are instructed to keep their children off the streets at all hours of the day and night including Sundays and election days.

"Resolved, That the Board of Education of McMillan township be requested to close the schools of this village for a period of three days after the arrival of said automobile, at the end of which time it is estimated that said automobile will be thoroughly broken and will stand without tying.

"Resolved, further, that these resolutions be spread upon the minutes of this board, that a copy be sent to the sorrowing friends of the owner of said automobile and that a copy be printed in the official newspaper."

Paul Azbill, of Columbia, Ky., has established an automobile stage line between that place and Campbellsville. The bus employed carries 18 passengers and makes two trips daily.

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Cars not Exempt in Kentucky.

In Kentucky, an automobile is neither a horse, team of oxen, dray nor spinning wheel, and incidentally cannot be held immune from levy for debt under the statute of household exemptions. This point was settled last week by Judge Thomas R. Gordon, of Louisville, who handed down an opinion sustaining a demurrer to the amended answer in the suit of George E. Cross against C. E. Price, involving a debt of $300 on a note.

Cross levied an attachment on the automobile of the defendant, alleging it to be worth $300, and the motor car was seized by the Sheriff. Price alleged that he was an employe of a mercantile agency, and needed his auto in his business, which necessitated his getting rapidly from place to place.

The defendant's attorney argued that the old law, passed in pioneer days which exempts from levy for debt certain household articles and names them, including a dray, a yoke of oxen, a horse or mule, a spinning wheel, one shovel, and so on, required for the carrying on of the farm, that representing the only business interest of the time. Although nothing is said as to automobiles, the attorney claimed that the intent of the statute covers such a case.

Judge Gordon says the courts have greatly extended the operation of this act, but that this is a case where its application would be an exaggeration, since if a man can hold a $300 car safe from levy he can also hold the most elaborate and expensive automobile, representing several thousands dollars of value, equally free from attachment.

"Automaniacs," Shouts the Agriculturist.

"Automaniacs and modern juggernauts" were the terms hurled at the motorist and his car at the annual meeting of the Minnesota Agricultural Society at its recent session in Minneapolis. Most of the hurling was done by the sadly afflicted M. T. Grattan, of Preston, who performed the same service a year ago. As a result of it the society probably will ask the Legislature to "do things."

Mayor Jones, of Minneapolis, who welcomed the agriculturists, said "me, too," but in saner fashion. He told them that there was no justice in barring automobiles from the highways, but he advised "no mercy toward the reckless chauffeurs who imperil lives, and promised that the best minded owners of automobiles would assist in any mevoment to control the insane speeding of men who bring the automobilists in general into disrepute."

To Open Denmark's Roads.

Denmark is growing restless beneath the yoke of its antiquated motor laws, and several prominent sportsmen have founded a society for the furtherance of automobilism in the kingdom. One of the first steps the society intends to undertake is to harry the authorities until they are convinced of the necessity of forming new and more moderate regulations. Only the chief high roads are open to motorists throughout Denmark, and with the exception of Copenhagen, all the parochial roads are entirely closed, and even where the motorists may venture by day they must not be caught out after sundown! Denmark is well suited for motoring, and its scenery would be most attractive to all lovers of the sport, were it not for these absurd legislative measures, which, it is to be hoped, will be speedily removed.

The Editor's Car is For Sale.

The soil in North Dakota is so rich that the editor of the Litchville Bulletin has bought a new automobile and is trying to sell his old machine. This is how he goes about it in his own paper:

I have a bay Rambler automobile I want to sell. It is sound in wind and limb, young, docile, is a good driver and can go a mile in 2.20. I drove it all last summer and fall while the other fellows who owned automobiles were patronizing the livery stables or walking. There isn't a blemish on it; no spavins, ringbones or heaves troubles it and its appetite is healthy. I feed it gasolene and can go twenty-five miles on a gallon, or less than one cent a mile.

The machine cost new $850 and $40 freight, but I will sell it for much less than that because I have bought a much larger car for 1906. Or I will trade it for sound farm horses from 5 to 10 years of age, weighing 1,200 to 1,400 pounds. I am willing to trade for horses because I am going to farm 1,000 acres with hired help this year and need a lot of horses and good wishes if I am to pull out of it in a sane and safe condition.

I will guarantee to teach any man who wears pants how to run the Rambler machine inside of two hours so that he can steer clear of telephone poles and miss most fence posts. Come in and look at it. You don't know anything about automobiles, but then I don't know anvthing about horses, and wouln't know a case of string-halt if I saw it; so it ought to be easy to trade, and my word ought to be as good as a horse trader's.

—The Editor.

Angell Suggests Whipping Posts.

George T. Angell, the Dumb Animals gentleman of Boston, who in his day probably has had to skip quickly out of the way of more than one street car and horse drawn vehicle, recently had to dodge an automobile and thinks if his "guardian angel had not been particularly active we should have probably lost our life." As a result, it seems to Mr. Angell "that the whipping post would be the most appropriate reward for the rascal who came so near killing us."

To Regulate 'Em in Washington.

A bill regulating the speed of automobiles in the District of Columbia has been introduced in the House by Representative Simms, of Tennessee, a member of the District committee. Twelve miles an hour is the maximum speed allowed within the city limits and five miles at street crossings, four miles an hour around curves and four miles on certain business streets.

What He Gave Without Charge.

Types of all kinds of grafters were to be seen at the shows last week, each working after his own peculiar fashion and each of whom, no doubt, slipped in unbeknown to the management and set his trap for the unwary by laying out folders in odd corners or playing the more hazardous game of personal canvass among the motorwise and dollar-foolish visitors.

Probably for sheer unvarnished gall, even surpassing that of the alleged storage company which, up among the airships in the armory gymnasium, carelessly scattered around ochre-colored slips with the inquiry "What the —— do you know about automobiles?" and ending with the admonition not to pay two prices to see the automobile shows when the alleged storage company's colossal exhibit could be seen for nothing, at such and such an address, was that of the haggard, amateurish individual who passed out the following card:

"Notice
"For your benefit,

"If you Do not wish to be skined, do Not try to buy a car without a practical man. If you want to get your money's worth, write or call for me, I am a constructor of automobiles and practical Chauffer, with knowledge of all gas machines, and being able to advise and Explain To you every advantage of all make of automobiles, have me to protect you and you get all That is coming to you for less money than without me. i secure testing rides and everything to make a complete automobile Without you having Any trouble.

"All this free Of charge.
"I am respectfully,
"_____ _____."

List to the "Motor Poet."

One of those misguided human beings called "motor poets," whom the muses would not inspire, was at his wit's end for a rhyme to "magneto ignition" and "calcium carbide," and wrote to his paper for suggestions. It is now a 100 to 1 shot that he wishes he had thought it out for himself. One correspondent suggested that "eternal perdition" would rhyme nicely with "magneto ignition." Another overcomes the rhyme for magneto ignition as follows:

"Magneto ignition, if fixed with precision, is so neat an addition, that I tell of its worth without asking commission." He also has the modesty to add: "For the rot that I've written on magneto ignition, I must own that I'm feeling some pangs of contrition." This is how he rhymes calcium carbide: "You'll sit on my near side—oh! halycon car ride, 'Mid the effulgence of calcium carbide."

One of Hearst's "Fine Frenzies."

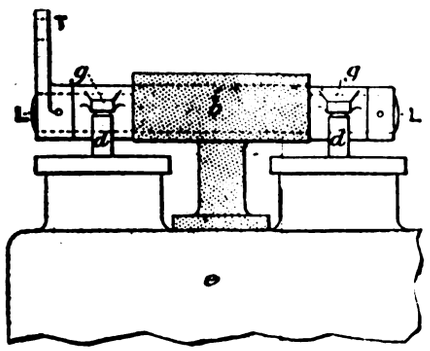
"How many human sacrifices will be made to the God of Go-Fast on the sandy altar of the Florida beach this winter?" This is one of the choice spasms from one of Hearst's papers on the Pacific Coast.

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VARIABLE INLET VALVES

Two of the Latest Developments of the Sort that Have Appeared Abroad.

Evidences of the growing vogue of the variable inlet as a means of controlling the speed and power of the motor were not wanting at the Paris Salon and it is interesting to note some of the various methods by which different builders have attained this object. In the Lambert, of which there are several models ranging from nine horse-power upward, all of which were equipped in this manner, this is accomplished by the insertion of an adjustable piece p, inserted between the cam and the lower end of the valve lifter. As will be plain upon reference to the illustration, this piece is joined to a smaller rocker arm at

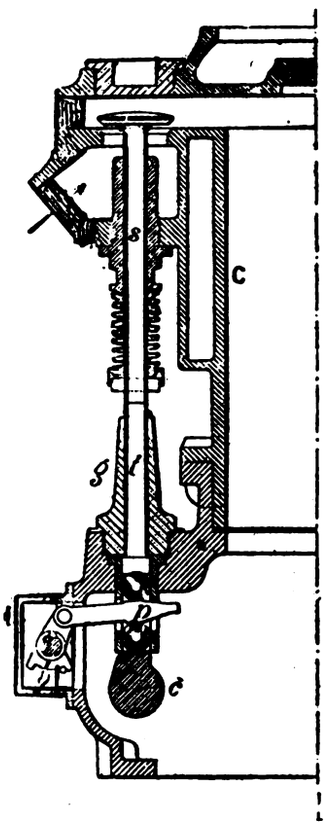


MOTOBLOC VALVE.

its outer end, the latter being arranged so as to be controlled from the driver's seat.

One of these tapering pieces is located at each valve, the separate rocker arms all being fastened to a light shaft just below and parallel with the cam shaft. In addition to being led to the lever on the wheel for hand control this rocker shaft is also connected up with the governor, the influence of the latter being cut out by the hand lever when desired. By the rotation of the shaft referred to, b, the wedge-shaped piece p may be either inserted further or withdrawn more from between the cam and lifter, the height to which the valve itself then rises being correspondingly regulated.

On the several four-cylinder models of the Motobloc cars of varying power, this is likewise a new feature, though the engine of this car is in fact, representative of departures of various sorts from standard practise in almost every respect. Its name for instance, which is literally "motor-block," is meant to convey the impression that both the engine and the change speed gear box are integral, but one chamber being provided for the reception of the crank shaft and the change speed gear shafts. The cylinders are cast in pairs and in the low powered types the fly-wheel is sandwiched in between two pairs of cylinders. The valves are all mechanically actuated from the same cam shaft, the induction valves being located in the cylinder heads and are operated by rocking levers and tappets. These rocking arms are all mounted on an eccentric shaft extending over the tops of the cylinders for their entire length and is arranged so as to be controlled by a small lever on the steering-wheel in the same manner as is customarily employed for spark and throttle control. By revolving this rod more or less the height of the rocker arms may be varied,



LAMBERT VALVE.

thus imparting a correspondingly different lift to the inlet valves.

What the East Indians Want.

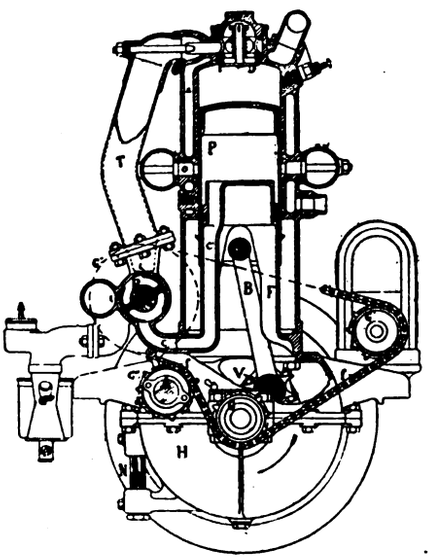
The motor cars and motorcycles have been noticeable in Bombay, Calcutta and Madras during the last two years, writes the French Consul General at the former place. Moreover, in various parts of India several schemes have been put forward for motor services to link up important centers and to connect health resorts with the nearest railway. There are now garages established in Bombay where automobiles can be hired by the hour; these appear to be well patronized.

Natives attach no importance to speed when purchasing a car, preference being given to a strong and trustworthy article. A voiturette, light enough to be carried by bearers across the fords, which have so often to be traversed in India, with wheels as high as possible, in order to be able to cross the more shallow fords unassisted, retailed at a price not exceeding $930, should command a ready sale.

EMPLOYS A ROTARY VALVE

Ingenious Innovation Incorporated in an Ingenious Two-Cycle Motor.

In view of the greatly increased amount of attention that the tyo-cycle engine has come in for of late through recent developments, it is interesting to note that the single system which has been in practical use on the other side embodies a radical departure from what is regarded as current practise in this country, not alone on the few representatives of this type of engine used on the car, but on the thousands which have been in constant use for years past in other fields.



LEGROS MOTOR.

This is the Legros which made its debut at Paris a year ago, causing more or less of a sensation at the time, as it was the first of its kind to be taken up seriously in a land where designers are universally pledged to the four-cycle. As a matter of fact, this engine cannot be compared with any of the various differing arrangements that have been devised to take advantage of the two-cycle principle, in the majority of instances by the addition of some auxiliary apparatus to gain the necessary initial compression. It is in a class by itself. In place of utilizing the base chamber of the crank as a receptacle for the incoming charge there to be compressed by the downward stroke of the piston, as is customary, the Legros uses a very long hollow piston indicated by P in the accompanying sectional elevation. Within this and concentric with it is a piece of slightly smaller diameter, which may best be described as a fixed piston. This is indicated by F. This arrangement, of course, necessitates the use of outside connecting rods of which there are two to each cylinder, one on either side.

Since the engine was first designed a rather novel feature has been added. This was first shown at the recent Salon and con-

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sists of a rotary valve, which acts both as an inlet and for the transfer of the mixture from the compression space to the combustion chambers. As the piston P rises a charge of mixture is drawn through the valve R and along the passage C into the compression space formed between the two pistons. On the descent of the piston P this charge is delivered through the rotary valve R to the induction pipe T and into the combustion chamber through the usual automatic valve.

On the compression stroke the space between the two pistons is again being charged with fresh mixture from the carburetter, and upon the explosion stroke a fresh charge enters at the top of the cylinder, the exhaust being gotten rid of in the usual manner, that is, by ports uncovered by the piston at the end of its downward stroke. The inlet valve is placed directly in the centre of the top of the cylinder head, the spark plug being located in the upper right hand corner. Ignition is by means of a high tension magneto chain driven from a sprocket on the main shaft which also actuates the pump and the rotary valve through the same medium.

Adaptability of the Motor Car.

Elmer M. Cooper, a progressive farmer near Cadiz, Ind., is emulating the example set by others of his fellow tillers of the soil by employing the gasolene engine as a labor saving device about the farm. But in addition, Cooper is what might be termed an automobile fancier: Last summer he gained considerable notoriety by owning seven different makes of cars. He purchased one and in a short time, becoming tired of it, bought another, finding each nearer to his conception of the ideal than the previous one.

Cooper has a gas engine which pumps water all over his farm. The other day this gas engine was disabled and refused to run. It meant either pump water by hand, get the engine fixed or choose some other way out of it. The resourceful Mr. Cooper backed his automobile up against the pumping apparatus, jacked up one rear wheel, transferred the belt and started his auto engine going. The pump worked admirably and the automobile pumped enough water all over the farm to water the stock. Before the engine could be repaired Cooper had to send away for some broken parts. It took some time, and in the meantime the hogs needed shelled corn. The sheller, of course, could have been operated by hand but it was too tiresome a process when one had been used to having it done by machinery, thought Cooper, so he hitched the automobile on to the sheller, and in less time than it would have taken the regular engine sixty bushels of corn were shelled.

"The A. B. C. of Electricity" will aid you in understanding many things about motors that may now seem hard of understanding. Price 50 cents. The Motor World Publishing Co., 154 Nassau Street, New York.

Apple's New Storage Cell.

In connection with the improved 1906 model of the Apple direct current generator and accumulator charger, the Dayton Electrical Mfg. Co. has brought forth an advanced type of storage cell for ignition purposes. Size and weight have been factors of prime importance in connection with the accumulator ever since it has been known and they are even more so when it is to be used for ignition purposes. In the latter field, the problem has been to keep down the size of the battery and still maintain the efficiency and output of one of much greater bulk.

As the result of considerable study and experiment with prevailing forms, the makers of the Apple have discarded the latter altogether and have done away with one of the plates by making the containing case of each cell in the shape of a lead bottle. This constitutes the negative element and



the positive is in the shape of a plate inserted in it and insulated therefrom by perforated rubber separators. The number of parts as well as the weight and size are thereby reduced to a minimum.

The inner surface of the bottle is dovetailed and the active material pressed into the recesses thus formed, while the positive plate is perforated with large square holes and treated in the same manner thus preventing the paste from dropping to the bottom of the cell.

In place of merely permitting any fumes generated to rise out of a vent hole, they are led off through small tubes from each cell to the bottom of the containing case and thus outside, preventing in this way any contact with the metal parts and avoiding the consequent corrosion.

Elaborate precautions have been taken to guard against short circuiting, the only projecting parts being the rubber corks in the filler holes and the end connections. Each bottle comprises a 30 ampere hour unit and any number desired will be supplied in neat japanned cases. The bottom of the case is made of hard rubber extending down half an inch farther than the metal while rubber separators are fitted between and around the cells. Once in place the units of a battery are covered with insulating composition applied in hot liquid form and become practically solid, in which shape they are well protected.

To Prevent "Racing" of Motors.

Single cylinder motors are particularly prone to race when relieved of the load and it is suggested that one efficient means of overcoming this objection without the necessity of having three hands to manipulate steering wheel, spark and gear changing lever, all at the same time, is to couple return it, once the clutch is re-engaged, that when the former is taken out in order to change the gear the spark is automatically retarded simultaneously. In order to return it once to the clutch is re-engaged, a spring should be fitted to ordinarily hold it in the advance position, thus not interfering with its control by hand. As the majority of single cylinder cars in this country are fitted with the planetary type of gear-changing mechanism—the rod from the contact breaker should be connected to the changing lever so that dropping out of high gear would actuate it. With such a device it would be necessary to guard against back-fires by carefully noting at every start whether the spring was holding the contact breaker in the extreme advanced position or not.

Here's the Motor Car-Boat.

Fournier, Edward, of Minneapolis, not Henry, of Paris, a scene painter by trade, and an inventor between jobs, has reached the climax of his life in the invention of an amphibiious motor-car-boat which looks something like a yawl on wheels, of course, and "runs equally well in land or sea." By an ingenious arrangement, the body, which in this case constitutes the hull, can be detached from the running gear, the driving mechanism connected with the propeller, and the rig is ready for deep sea cruising. Whether the running gear constitutes as much of an overload for the hull when the thing is in the water, as the hull does for the running gear when it is on land, no one seems to know just at present, but if it does, the name of Fournier is likely to be affixed to "sets" and "drops" for some time to come.

Springs in Universal Joints.

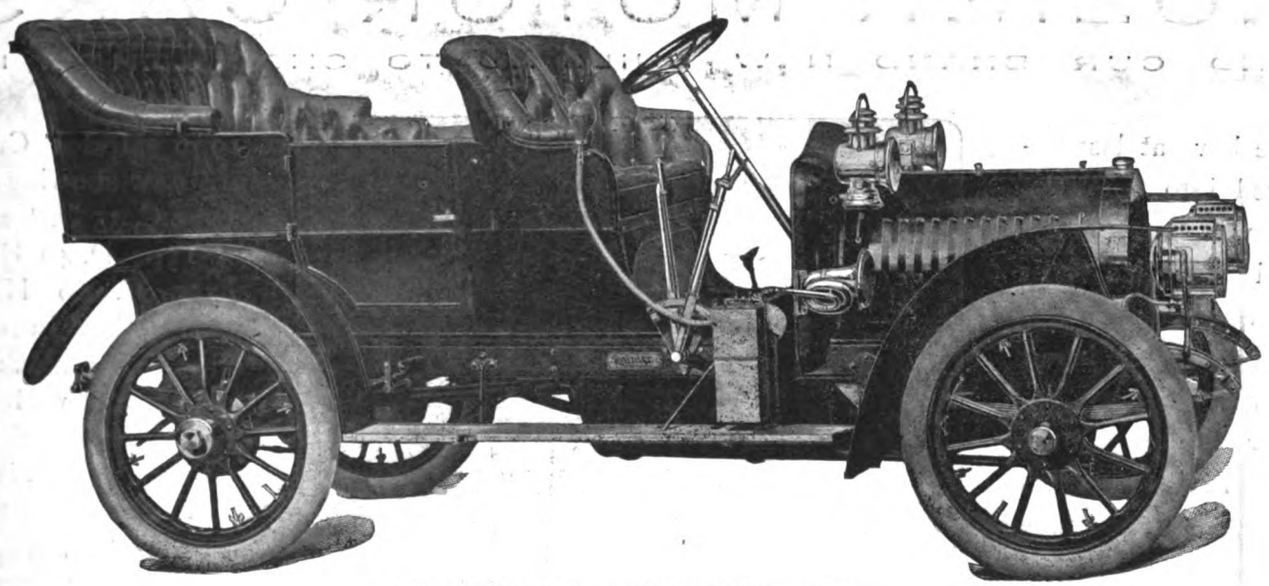
Among other features the new Siddely cars are equipped with an arrangement by which a spring in the universal joint on the cardan shaft keeps the inner member of the joint from hammering the back of the outer member, and prevents noise and wear. The outer member is a square box and the inner member is also square, bevelled edges permitting of a sliding but not a rotary motion, and it is between these two parts that the spring is fixed, keeping them apart, but allowing the joint to play in and out, as required by the spring of the frame. The introduction of springs appears to be a feature of this car, as it is further equipped in the same manner to prevent wear on the valve tappets.

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Rainier

The Pullman of Motor Cars

1906 Catalogue and Cars Now Ready.



1906 MODEL B, 30-35 H. P. PRICE, $4,000.

GUARANTEED FREE OF REPAIRS FOR ONE YEAR.

During 1905 the Rainier was the hit of the season in New York, the most critical of markets. Not a single dissatisfied customer, only favorable comments everywhere, and orders galore for the new model from former users. Before you decide, investigate the Rainier, carrying the world's broadest automobile guarantee.

Make and break spark. Simms-Bosch Magneto. Bevel gear drive.

THE RAINIER COMPANY, Broadway, cor. 50th St., New York.

Chicago Branch: 1253-1255 Michigan Ave. (after January 15th).

Boston Agents: MORRISON-TYLER MOTOR CO., 121 Massachusetts Ave.

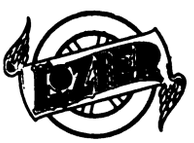
Good Agents wanted in unassigned territory.

The Rainier Car will be exhibited at the Armory Show in Chicago.

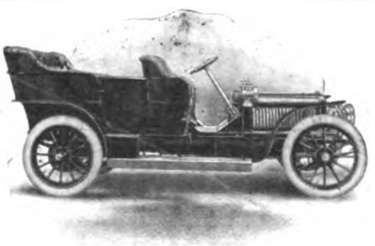
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LOZIER MOTOR CARS

AND OUR BRAND NEW BUILDING TO SHOW THEM IN

We have at last entered into our own. It was our move, and now it's your move—and there is plenty of space in our new showrooms to move all around the LOZIER CARS in order that they may be well investigated from every point of view. The entire building of four stories and basement will be devoted to the business of The Lozier Motor Company, with their fine line of High-grade Motor Cars, Motor Boats and Marine Motors.



1906 Model Cars are now showing in Type C, 35 H.P. and in Type D, 40 H.P. Type E, 60 H.P., will follow later. These are all beautiful cars, and we have in stock for immediate delivery, Touring Cars, Limousines and Landaulets, all of which are built in the usual Lozier high-grade manner. The prices of Types C, D and E range from $4,500 to $7,500, and our handsome Descriptive Catalogue treats upon the general features of Lozier construction. We would be very glad to send you a copy.

THE LOZIER MOTOR COMPANY, 55th St. and Broadway NEW YORK CITY

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HAWKINS ON THE HORSE

Pittsburger Points Out Some Very Plain Truths and Talks of Bigotry.

Dr. John A. Hawkins, one of Pittsburg's prominent automobilists, is of the "right sort." In a recent address, he gave his townspeople some very plain facts and some very plain figures that should cause them to sit up and they are of just as much value outside of his vicinity as within it. Hear the doctor:

"The report of the coroner of Allegheny county for the year 1905 is particularly of interest to both automobilists and motorphobes, inasmuch as there are upwards of 1,200 automobiles in daily use within the county. The report shows that of the 2,119 inquests, death was due to: Railroads, 323 cases; mills, 158; falls, 156; street cars, 81; mines, 64; murders, 45; natural gas accidents, 15; run over by wagons, 13; kicked by horses, 6; crushed in elevators, 5; struck by missiles thrown, 4; thrown from carriage by runaway, 1; thrown from automobile, 1; run over by automobile, 1. One death in 1,000 due to automobiles or motor vehicles, 40 deaths in 1,000 due to horses or horse vehicles, 40 deaths in 1,000 due to street cars, 160 deaths in 1,000 due to railroads.

"Railroads have been inexistence more than 60 years; power-driven street cars about 20 years, and automobiles three years. When pedestrians become accustomed to look out when passing back of street cars and stepping off sidewalks, accidents from automobiles will be unheard of. The automobile can be stopped in one-twentieth the distance it takes to stop a horse going at the same speed, besides, the auto takes up less room on the street; does not soil the street; does not cut up the asphalt, or in any manner injure streets or roads; never shies at roadside objects; never runs away when driven by one who knows how, and need not be hitched. It is doubly taxed, abused, cartooned and condemned with its owner to eternal damnation by a bunch of evil-thinking, narrow-minded, selfish bigots, who would eagerly stop the wheels of progress by burning at the stake, as witches and wizards, all those who were not of the same mind in religion, politics and tastes.

"Automobile touring has become a God-send to small towns, opening up moss-grown hotels and bringing more money to villages than was ever dreamed of a few years ago. Millions are annually spent by tourists in France, not because they love France more, but because the Frenchman loves our money and is far-seeing, and instead of cursing the automobile he builds good roads, keeps good hotels and is accommodating; does not discriminate between horses and automobiles by unjust taxation.

"Munsey says: 'That it is estimated that there are more than 200,000 people employed in the automobile industry in France alone, and that the value of cars made in France has increased in the past seven years from $2,000,000 to $50,000,000.'

"Think of it! Think of what an industry bigots and malcontents are trying to throttle by unreasonable laws, legislative graft, and unjust taxation. If these bigots have no justice in them, surely their fathers instilled a bit of patriotism into them, or if not, their sense of greed should show them that they are simply trying to kill the goose that is laying the golden eggs. This class of so-called good citizens are not the ones who have spent their good money in agitating the building of good roads. It has been the bicyclist, and later the automobilist. Ask the thinking farmer along one of our macadamized roads how long it now takes to bring his produce to the city and he will tell you he can make the trip in fall, winter or spring in one-fourth to one-half the time it formerly took him when the roads were at their best in the summer.

"Reckless automobilists should be punished, as all other offenders against the rights of his fellow man, but pedestrians should not sleep when crossing streets, nor should a useful mode of travel, the result of progress, be condemned and all the users be classed as thugs and lawbreakers any more than a railroad company or its careful employes be condemned for the accidents of negligent or careless enginemen or motormen."

Up-State Chauffeurs Become Ambitious.

Binghampton, N. Y., now has a chauffeurs' training school, established in connection with the Binghampton Chauffeurs' Club. At a special meeting last week plans for the school were perfected and it will be formally opened Saturday, this week. Lectures on motors and motoring will be given each Saturday night and will be followed by a general round table discussion of the points brought out in the lecture. A committee was appointed to arrange the course of instruction and provide for a regular instructor.

Gasolene Chauffeurs Incorporate Club.

The Professional Chauffeurs' Club of America, which has its headquarters in New York City, is now a corporate body, papers having been taken out last week. According to them, it is formed to promote and elevate professional chauffeurs as applied exclusively to the drivers of gasolene engines, and to maintain a club house. Valentine Koch, Frederick W. Walsh, William H. Walter, Frederick Brevogel and Marten J. McGuire, all of New York City, are named as directors.

Nashville Taxes Hired Vehicles.

Nashville, Tenn., has passed an ordinance taxing automobiles "owned, maintained or operated for profit" $15 per annum. Automobiles used for omnibusses are assessed $420 per year.

"GUEST" GETS DAMAGES

Injured in an Accident he Sues and Wins—First Case of the Sort.

An apparent precedent has been established in Connecticut governing the liability of the driver of a car for injuries to passengers, received while in the car. By the decision of Judge Joel H. Reed, in Superior Court, Hartford, which will, however, likely be appealed, Walter G. Johnson, a chauffeur, of New York City, is entitled to recover damages in the sum of $2,500 from the Electric Vehicle Co., of Hartford, Conn., or rather from the Aetna Indemnity Co., as the automobile company held employers' liability insurance.

Johnson was a chauffeur employed by J. J. Welch, of New York City. When Welch purchased a touring car from the Electric Vehicle Co., Johnson was sent to Hartford to learn its operation. At his, Johnson's, request, he was sent out with John M. Sheehan, one of the testers of the company. While out with Sheehan, Johnson was injured in an accident by colliding with a team near Longmeadow, Mass. At the trial Johnson testified that at the time he realized that the car was traveling too fast for safety and implored Sheehan to slow down, but that the latter only laughed at his fears. In discussing some of the propositions of law set up by the defendant, Judge Reed, in a memorandum of decision, says:

"It is claimed by the defendant that since the plaintiff was permitted to ride on the testing car at his request, he was a mere licensee, and that the rule applies that there is no duty owing to a licensee by a licensor, except that he shall not willfully injure him. The cases cited in the defendant's brief on this point are all cases illustrating the rule that a licensee going upon the land of another must take the land as he finds it. No case has been cited where the distinction between the duty owed to a licensee and an invitee has been applied to a case like this, or to any case not involving an entry on land, or the use by the plaintiff of the defendant's premises."

The judge says that it seems to him that the doctrine of the liability of a licensee does not apply, and whether the plaintiff be considered as a licensee, invitee, passenger for hire, or whether the relation of master and servant existed, the defendant owed the plaintiff a duty not to injure him by gross carelessness. The negligence of Sheehan should not be imputed to the plaintiff. It would seem to come with more force when set up by a third party than when set up by the defendant.

The judge continues:

"If I take a person into my carriage voluntarily to ride with me, and injure him by my own negligence, why should I be allowed to say that he was guilty of negligence in riding with me? It is significant that no authority has been cited applying to circumstances like these."

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The Week's Patents.

809,292. Gas Engine. William T. Fox, Rochester, N. Y. Filed August 17, 1904. Serial No. 221,051.

Claim.—1. In a gas engine, the cylinders having each a piston and arranged in four pairs, a rigid rod connecting the pistons of each pair, two crankshafts, one for each double pair, a main or driving shaft operatively connected in the crankshafts, and means for successively exploding gas in the cylinders to drive said main shaft at every quarter-rotation thereof.

809,295. Gas Producer. Jerome R. George, Worcester, Mass., Assignor to Morgan Construction Company, Worcester, Mass., a Corporation of Massachusetts. Filed July 10, 1903. Serial No. 164,934.

Claim.—1. In a gas producer the heating chamber having an opening at its top for the admission of fuel, of a fuel reservoir placed above said opening and having an opening in its bottom for the delivery of fuel to a distributer, a distributer between the opening in the heating chamber and the opening in the reservoir, said distributer consisting of a rotating shell smaller at its lower than at its upper end, with an opening at its upper end larger than the delivery opening of said reservoir and concentric with its axis of rotation, and with an opening at its lower and eccentric with its axis of rotation, and a disc inclosed in said distributer having its diameter larger than the diameter of the delivery opening in said reservoir, with an annular space around said disc for the passage of fuel.

809,331. Clutch Mechanism. Michele G. de Simone, London, England, Assignor of three-eighths to Domenico Robert de Simone and one-fourth to The Wilkinson Sword Company, Limited, both London, England. Filed April 14, 1905. Serial No. 255,529.

Claim.—1. In a liquid clutch, the combination of a rotary clutch member having a circular recess eccentric to the axis of rotation, a second clutch member formed with radiating cylinders, plungers in said cylinders the ends of which engage the inner face of said eccentric recess, a common liquid chamber in communication with all the cylinders, a separate valve between each cylinder and the common liquid chamber, and means for operating all the valves to allow the liquid to flow freely between the common liquid chamber and the cylinders and the plungers to reciprocate in the latter under the action of the eccentric surface of the second clutch member, whereby the clutch will run idle, said means also serving to operate all the valves to close communication between the common liquid chamber and the cylinders and lock the liquid therein and the plungers in rigid engagement with the eccentric surface of the second clutch member whereby both members are forced to rotate together.

809,341. Vehicle Brake. Bartholomew Viola, Brooklyn, N. Y. Filed March 20, 1905. Serial No. 250,912.

Claim.—1. The combination with a vehicle, of a member on a wheel thereof and having engageable devices thereon, a shaft, a member shiftable relatively to said shaft, and adapted to co-operate with said engageable devices, a hand brake attached to said member to prevent its rotation when the same co-operates with said engage devices, and levers adapted to effect the relative movement of said member.

809,333. Car Movement Explosive Engine. Philip K. Stern, New York, N. Y. Filed January 22, 1903. Serial No. 140,087.

Claim.—1. In a reciprocating explosive engine, wherein the motion of the reciprocating medium is adapted to be translated into a rotary motion at its flywheel, a kinematic connection between the flywheel and the reciprocating element located within the hub of the flywheel, for converting the motion of the reciprocating element into a relatively constant rotary motion of the flywheel and conversely for transforming a constant rotary motion of the flywheel into a periodic reciprocating motion of the reciprocating element, together with suitable valve mechanism for controlling the working fluid for said engine, actuated by said flywheel, substantially as described.

809,337. Power Transmitting Mechanism for Motor Vehicle. Robert Symonds, Jr., Kenosha, Wis., Assignor to Thomas B. Jeffery, Kenosha, Wis. Filed April 7, 1905. Serial No. 254,378.

Claim.—1. A power transmitting mechanism comprising a power shaft and power wheel thereon; a power transmitting wheel loose on the power shaft and disengageably engageable with the power wheel; a gear rigid with the power wheel and a speed reducing gear train therefrom to the power transmitting wheel; a frame for carrying the intermediate gear train which is mounted rotably about the power shaft, and means for holding such frame against rotation.

809,338. Power Transmitting Mechanism for Motor Vehicles. Robert Symonds, Jr., Kenosha, Wis., Assignor to Thomas B. Jeffery, Kenosha, Wis. Filed April 7, 1905. Serial No. 254,379.

Claim.—1. A power transmitting mechanism comprising a power shaft, a power transmitting wheel loose on such shaft; a driving gear rigid with the power shaft; a driven gear rigid with the power transmitting wheel; a gear frame and a gear frame therein having an initial wheel meshing with said driving gear and comprising two gears in different transverse planes connected in the train for opposite rotation and each adapted for meshing with the driven gear, said gear frame being movable along the power shaft and means for moving it back and forth.

809,372. Variable Speed Gear. Emil A. Hoefer, Freeport, Ill., Assignor to Hoefer Manufacturing Company, Freeport, Ill. Filed July 29, 1905. Serial No. 271,868.

Claim.—1. In mechanism of the class described, in combination, a shaft, a plurality of loose gear wheels, stepped and concentrically mounted thereon, and rotating means adapted to separately and interiorly engage and revolve said gear wheels, substantially as described.

809,400. Valve Mechanism for Internal Combustion Engines. William H. Schoonmaker, Montclair, N. J. Filed February 11, 1904. Serial No. 193,032.

Claim.—1. The combination of a valve stem mounted to reciprocate and to turn and having annular or part annular rack teeth thereon, and a pinion meshed with the rack teeth, to impart reciprocal movement thereto.

809,406. Variable Speed Gear. Morton C. Talcott, Hartford, Conn. Filed October 14, 1905. Serial No. 282,791.

Claim.—1. A gearing having a motor shaft, gears of different diameters on the motor shaft, a transmission shaft, gears of different diameters on the transmission shaft and meshing with the gears on the motor shaft, the gears on one shaft being keyed and the gears on the other shaft being loose, clutches adapted to connect the loose gears with their shaft, a reciprocatory bar, dogs carried by the bar and adapted when moved in one direction to cause the closing of the clutches successively, and a wedge bar arranged to cause a disengagement of the dogs and allow the clutches to successively release, substantially as specified.

809,409. Pneumatic Tire. Pardon W. Tillinghast, Edgewood R. I. Filed March 5, 1903. Serial No. 146,396.

Claim.—1. A pneumatic tire, having an air tube constructed of caoutchouc the surfaces of which are rendered non-viscous and unvulcanizing for the purpose of facilitating repairs.

809,421. Expansible Sprocket. Arthur W. Boon, Brixton, England. Filed January 27, 1904. Serial No. 190,842.

Claim.—1. In a variable sprocket wheel the combination with a drum having a series of radically arranged slots, of a series of adjustable blocks forming a variable circumference to said drum, of teeth pivoted in recesses in said blocks, and of springs operating to retain said teeth in their operative positions but allowing them to give way when they are inoperative, as set forth.

809,451. Double Acting Explosive Engine. Joseph W. Kyle and John W. Hicks, Chicago, Ill., Assignors of one-third to Garfield G. Bennett, Chicago, Ill. Filed December 17, 1902. Serial No. 125,593.

Claim.—1. An explosive engine comprising a cylinder, simultaneously reciprocating pistons in each end thereof, a generating and mixing device, a pipe leading therefrom and opening into each end of the cylinder beyond the outermost travel of the pistons, an inlet port in open communication with the pipe and disposed between the pistons when at their outermost limit of movement, an exhaust port also opening between the pistons when so positioned, a sparker positioned to ignite the charge when the pistons are at their inward limit of movement, a transverse shaft intermediates the ends of the cylinder, a plurality of oppositely disposed cranks thereon and means connecting the outer ends of said pistons with said cranks and adapted to rotate said shaft.

809,475. Motor Vehicle. Thomas L. Sturtevant, Quincy, and Thomas J. Sturtevant, Wellesley, Mass., Assignors to Sturtevant Mill Company, Portland, Me., a Corporation of Maine. Filed June 6, 1905. Serial No. 263,937.

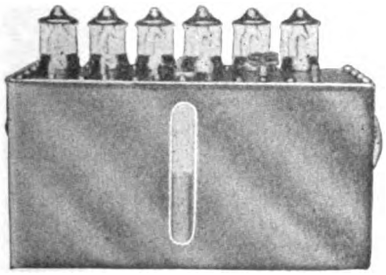
Claim.—1. In a motor vehicle the combination with a vehicle frame comprising side beams, of an opposed cylinder engine frame arranged crosswise of said vehicle frame and forming a rigid transverse part of said vehicle frame, said engine frame being disposed between the front and rear axles of the vehicle and with the cylinder portions of said engine frame inside or between the outside parts of said side beams and approximately central, vertically, of the said side beams.

809,501. Antivibration Device for Vehicles. Georges Grillier, Chicago, Ill., Assignor to The Automobile Importing Company, Chicago, Ill., a Corporation. Filed April 26, 1905. Serial No. 257,495.

Claim.—1. An antivibration device for vehicles, comprising two arms pivoted

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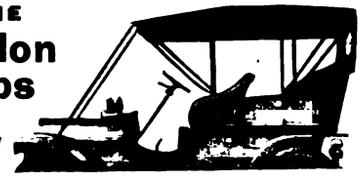
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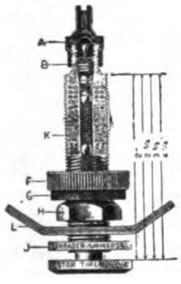
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together and having respectively a casing and a friction ring in contact therebetween, the pivot bolt connecting the arms having a tapered sleeve-nut which fits in a tapered socket in one of the arms.

809,509. Motor Car. Frederick W. Lanchester, Edgbaston, Birmingham, England. Filed June 3, 1905. Serial No. 263,579.

Claim.—1. A motor vehicle in which the motor is situated in the leg space of the front seat and in proximity to the dashboard of the vehicle, substantially and for the purposes set forth.

809,525. Motor Vehicle. Albert Nunamaker, Cleveland, Ohio. Filed April 26, 1905. Serial No. 257,434.

Claim.—1. The combination, in a mechanism of the class stated, of an axle and a wheel spindle having non-circular recesses in their ends, and a universal joint between the same having connecting necks fitting in said recesses and having longitudinal movement therein.

809,530. Pneumatic Tire Cover. William A. Sankey, Sutton, England, Assignor to Frank Reddaway, Manchester, England. Filed January 24, 1905. Serial No. 242,544.

Claim.—1. A tire cover having beaded edges and a wire embedded in each of said edges, layers of canvas in such tire cover part of which are secured around the cores of the beaded edges and the remainder around the wires in such edges, substantially as described.

809,537. Tire for Wheeled Vehicles. Frank H. Sterling, London, England. Filed December 6, 1904. Serial No. 235,755.

Claim.—1. The combination, with a wheel rim of spiral springs secured around the said rim, bridge-pieces arranged around the said springs, pivotal connections between adjacent ends of the said bridge-pieces, and flexible connections arranged radially between the said wheel rim and bridge pieces and limiting the outward movements of the said bridge pieces.

809,540. Transmission Gearing. Morton C. Talcott, Hartford, Conn. Filed October 14, 1905. Serial No. 282,790.

Claim.—1. In a transmission gearing, a shaft, gears of different diameters loose on the shaft, clutches adapted to connect the gears with the shaft a bar bearing racks, pinions adapted to be successively rotated by the racks, and connections between the pinions and the clutches for operating the clutches, substantially as specified.

809,560. Combined Sparker and Governor for Gas Engines. David F. Graham and Frank A. Fox, Stamford, Conn., Assignors, by mesne assignments, to the Eisenhuth Horseless Vehicle Company, Middletown, Conn., a Corporation of Maine. Filed March 11, 1903. Serial No. 147,229.

Claim.—1. A combined sparker and governor for explosive engines, comprising a revoluble cam shaft; a spirally grooved sleeve mounted upon said shaft; a cam surrounding said sleeve and provided with projections entering the grooves of the sleeve and having an internally threaded recess at its upper end; ignition contact operated by said cam, and a governor comprising an upper head fixed to said shaft, a lower movable head having an externally threaded extension engaging the threaded recess in the cam and screwed partially home, toggle levers connecting said heads, and weights on said levers, whereby the cam is given both a reciprocatory and a rotary movement, substantially as set forth.

809,578. Sparking Plug. William Ottaway, Aurora, Ill. Assignor to Aurora Automatic Machinery Company, Aurora, Ill., a Corporation of Illinois. Filed February 15, 1904. Serial No. 193,606.

Claim.—A sparking plug comprising an insulating sleeve, a stem which passes through the sleeve and is provided with a head at its inner end, a packing interposed between said head and an opposing surface or shoulder on said sleeve, a cap applied to the outer end of said sleeve, a second cap which slides on the first named cap and the head of which is perforated for the passage of the said stem, a nut on the stem adapted to bear against said second cap, and a spring interposed between said caps and acting to exert endwise tension on said stem.

809,588. Racecourse for Automobiles. John B. Thomas and Jasper Lynch, Lakewood, N. J. Filed April 1, 1905. Serial No. 253,274.

Claim.—1. A racetrack for automobiles, comprising two straight portions crossing one another at different levels, each end of each straight portion being connected with each end of the other portion by means of loops.

809,614. Internal Combustion Engine. Henry C. Holloway, Gilroy, Cal., Assignor of one-half to William De Hart, Watsonville, Cal. Filed February 6, 1905. Serial No. 244,458.

Claim.—1. An internal combustion engine comprising a cylinder closed at both ends, a piston, a piston rod extending through the stuffing box in one head, connecting with the crosshead and crankshaft, inlet and outer passages contiguous to the lower cylinder head, automatically operating valves by which gas is admitted to the cylinder and transmitted therefrom, said valves operated by and during the movement of the single power piston, a receiver for the compressed gas, an independent combustion chamber intermediate between said receiver and the cylinder, and a valve controlling the transmission of gas from the received to the combustion chamber.

809,641. Vehicle Tire. James A. Swinehart, Akron, Ohio. Filed April 3, 1904. Serial No. 201,248.

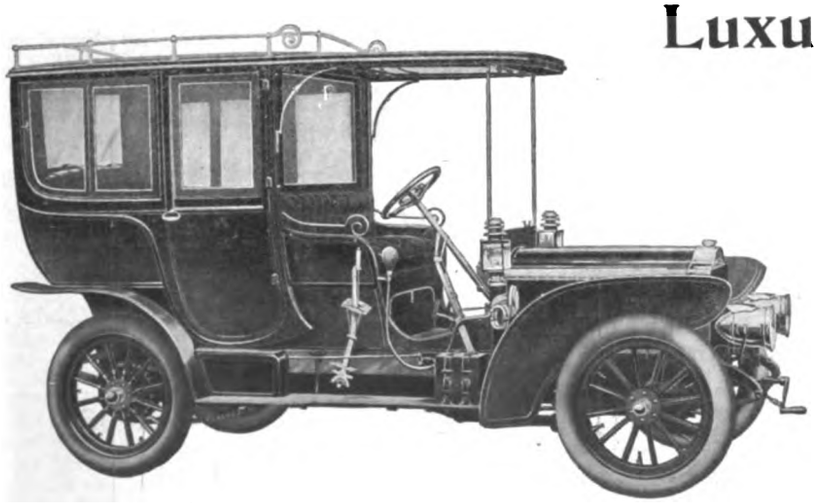
Claim.—1. In vehicle tires, a metallic rim having opposite incurved edges about its periphery, in combination with a solid continuous rubber tire in said rim provided with side ribs engaged beneath said edges, a binding material interposed between said rim and tire and cemented to both, and cross wire extending transversely.

809,564. Exhaust Muffler. Louis T. Weiss, Brooklyn, N. Y. Filed August 18, 1905. Serial No. 274,742.

Claim.—1. An exhaust muffler, having an expansion chamber which receives the exhaust from the engine, said chamber having an outlet for the exhaust, and automatic means controlling said outlet and opening and closing the latter alternately.

809,656. Automobile Frame. Allie R. Welch and Fred S. Welch, Pontiac, Mich. Filed May 25, 1905. Serial No. 262,782.

Claim.—1. In a vehicle frame, the combination of a side piece bent inward for a portion of its length and a strip rigidly secured to the bent-in portion of said side piece, extending beyond said bent-in portion at a distance from said side piece and rigidly secured toward the end to said side piece.



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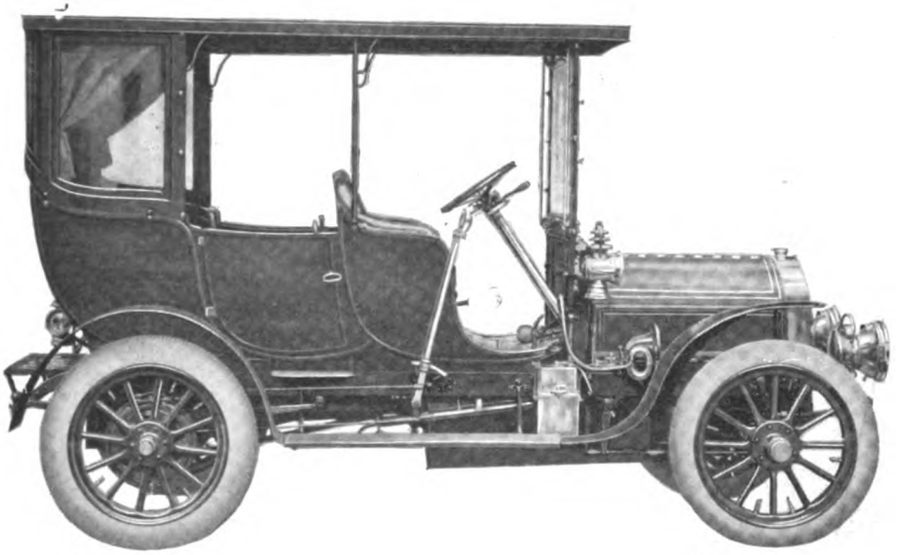
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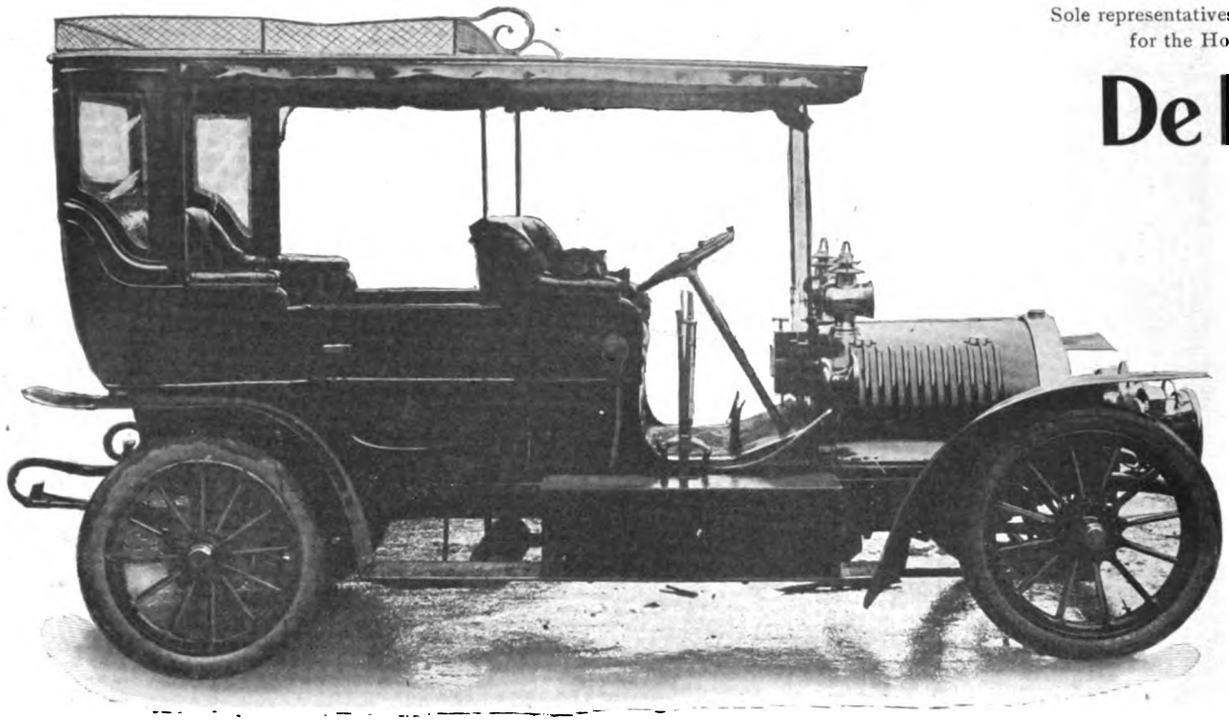
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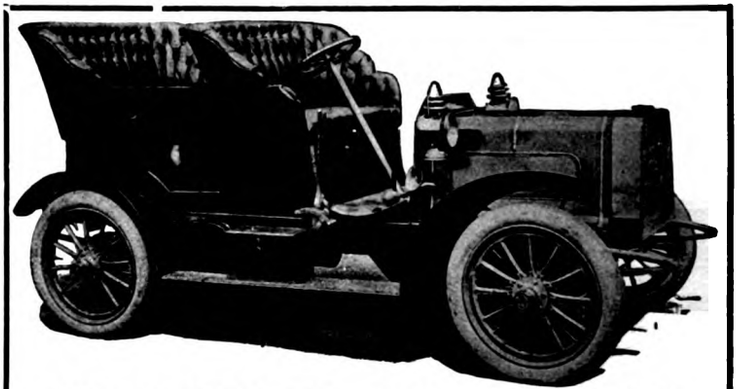
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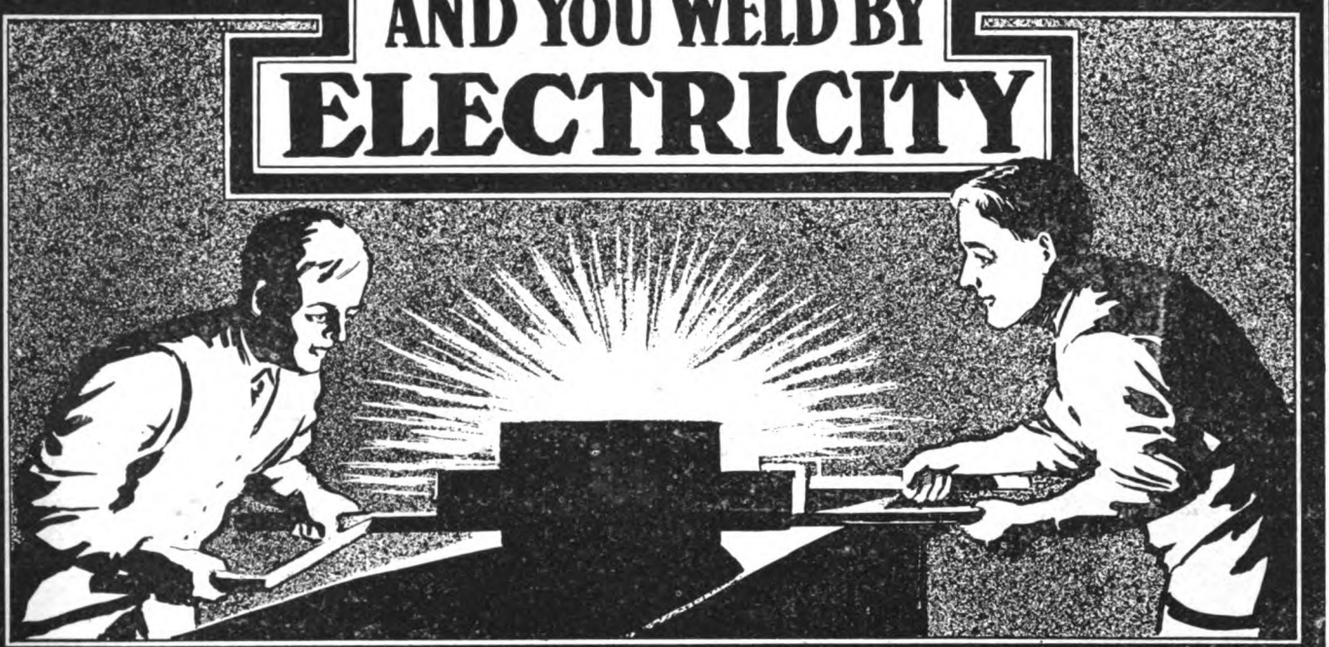
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This, in conjunction with our splendid construction throughout the car, makes the Premier, "The Quality Car," stand out boldly among its competitors, evidencing its worth in its pressed steel frame, 20-24 H. P. motor, selective type, three speeds forward and reverse sliding gear transmission, shaft drive, buoyant but firm full elliptic springs, I beam front axle efficient brakes, perfected lubricating system, light weight, high power, great speed, pleasing design, comfort and elegance of equipment. These features CAN'T HELP appealing to those interested in the subject of motor cars.

AIR COOLED

$2,000.00 and $2,250.00 F. O. B. Indianapolis

Send for Catalogue and Booklet (S).

Premier Motor Mfg. Company

Indianapolis, Ind., U. S. A.

Members American Motor Car Manufacturers Association.

BLISS

Built by
E. W. BLISS CO., of Brooklyn, N. Y.

30 H. P.

THE CAR WITH A REPUTATION BEHIND IT.

DOUGLAS ANDREWS
Selling Agent,
1623 Broadway, New York

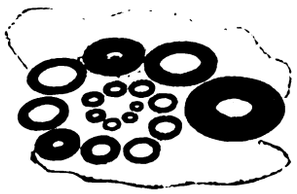
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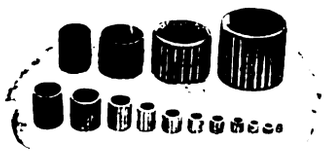
Flanged Annular Ball Bearing.



Grooved Ball Thrust.



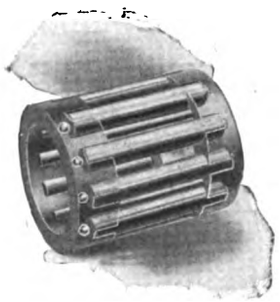
Ball Thrust Collars.



Journal Roller Bearings.



Rear Automobile Hubs.



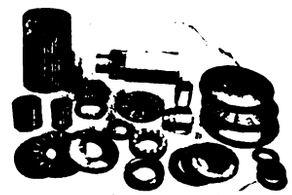
Journal Roller Bearing.



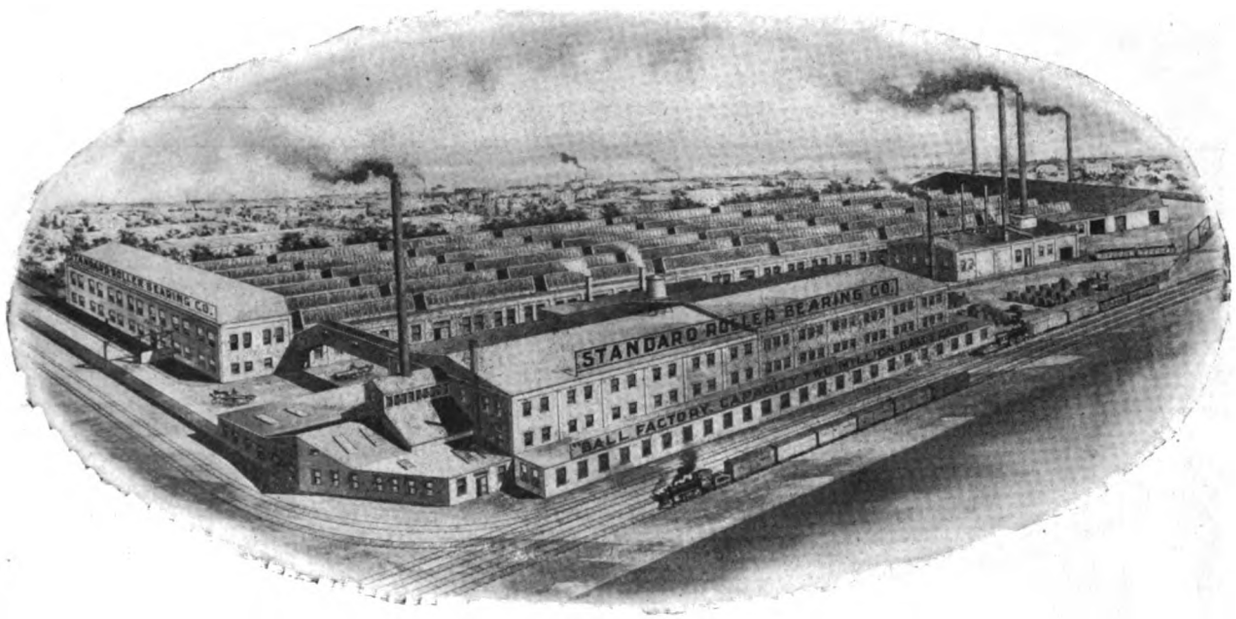
Plain Roller Thrust.



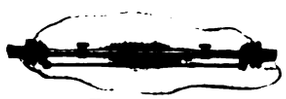
Annular Ball Bearing. Full Type.



Miscellaneous Bearings.



Total Floor space, including Automobile Axle and Annular Ball Bearing Department, 175,000 square feet.



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Lemoine Axle.



Bevel Gear Axle.



Chain Drive Axle.



Roller Bearing Hangers.



Sleeves and Casings.



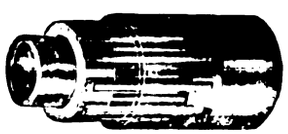
Ball Thrust Collar.



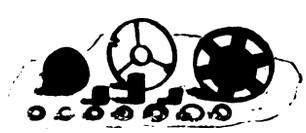
Journal Roller Bearings.



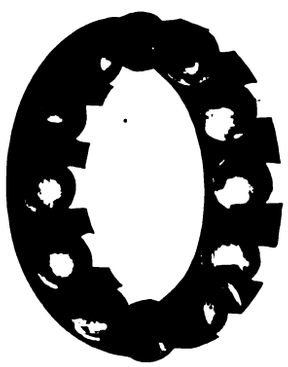
Annuler Ball Bearing. Silent Type.



Roller Bearing with Casing and Sleeve.



Front and Rear Hubs.



Ball Retainer.

STANDARD ROLLER BEARING COMPANY

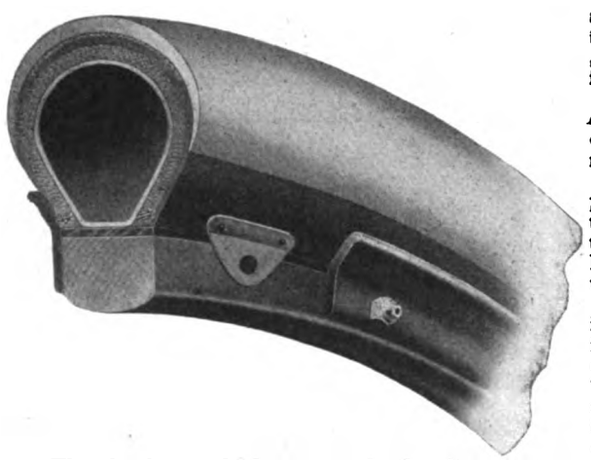
48th & Girard Avenue,
PHILADELPHIA, PA.

Send for New Catalogue.

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"Firestone"

Pneumatic Tires



are designed to do away with all the objectionable features which have existed to so great an extent in pneumatic tires heretofore made.

We well knew of the existence of these objections and laid our plans for the making of a pneumatic tire which should contain none of them.

Our success has been demonstrated and proven in the severest of continued road tests and it is with the utmost confidence in their thorough worth that we recommend FIRESTONE TIRES and stand back of them.

The body of the FIRESTONE TIRE is unusually sturdy in its make-up. The fabric used is the best Sea Island Cotton, carefully selected for purity and strength. The rubber is the choicest Up-River Para so scientifically compounded as to give it the greatest possible wear-resisting quality.

The tire is attached so securely that it cannot possibly come off, inflated or deflated, no matter how severe the service.

The union of the tire and flange is extremely close to prevent moisture from penetrating to the inner surface to the detriment of tube or casing.

The removal and replacement of a FIRESTONE PNEUMATIC TIRE is accomplished with the utmost ease and in the shortest possible time.

Any novice can with an ordinary wrench secure access to his inner tube or remove the tire complete in less than 2 minutes. The tube may be replaced and the tire refastened in the same time.

There is no prying or pulling on the tire, and consequently no possibility of causing injury, such as frequently occurs from the use of old-fashioned tire tools.

Remember, we particularly recommend FIRESTONE TIRES to any one who appreciates the best the market affords. We know they are supremely good and will give better and more lasting service than any tire you ever used.

FIRESTONE SIDE WIRE SOLID TIRES for commercial vehicles have been on the market for years and have proven the excellence of our methods of construction.

To-day more than 80% of all such tires in use in this country are FIRESTONE TIRES.

We invite correspondence and will be pleased to furnish full information and advertising literature upon request.

Then Why Not "Firestone?"

FIRESTONE TIRE & RUBBER CO., - Akron, Ohio.

BRANCHES:—New York Chicago Boston Detroit Philadelphia St. Louis

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The manufacturer who equips his cars with Veeder odometers reaps a crop of mileage enthusiasts, who, in the face of the odometer readings, will make no unreasonable demands for replacements or free repairs.

THE VEEDER MFG. CO., Hartford, Conn.

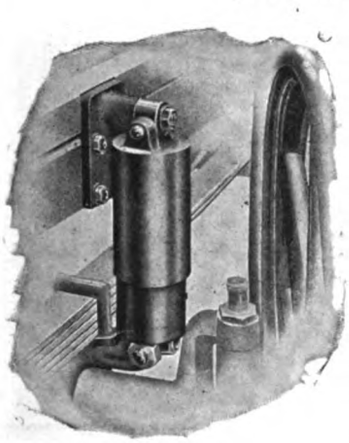
Makers of Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

RIDE ON AIR!

Kilgore Automobile Air Cushion

"SHOCK ELIMINATOR."

(PATENT ALLOWED)



ON GOOD ROADS—They Allow you to use and enjoy the full elasticity of EASY FLEXIBLE SPRINGS, OBSERVE we say "full elasticity."

ON BAD, DANGEROUS ROADS—They control the too violent spring play BOTH UP AND DOWN, OBSERVE we say "both up and down."

THEY TRANSFER THE LOAD and strain from the springs to the axles.

THEY PREVENT spring distortion and breakage.

THEY LESSEN THE WEAR and tear on tires.

THERE ARE NO ADJUSTMENTS.

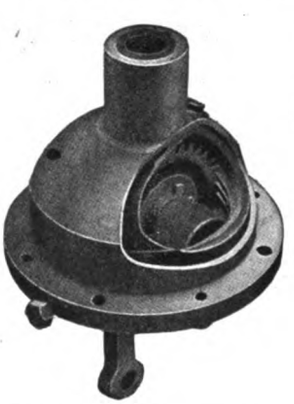
This should interest you because:—
It adds to your comfort and safety,
It effects a direct saving in "up-keep."

Write for full particulars.

KILGORE AUTOMOBILE AIR CUSHION CO.

49 COLUMBUS AVENUE, Boston, Mass.

BROWN-LIPE GEARS



Irreversible Steering.

Bevel and Chain Drive Differential.

Many Sizes and Models.

Sliding Gear Transmission.

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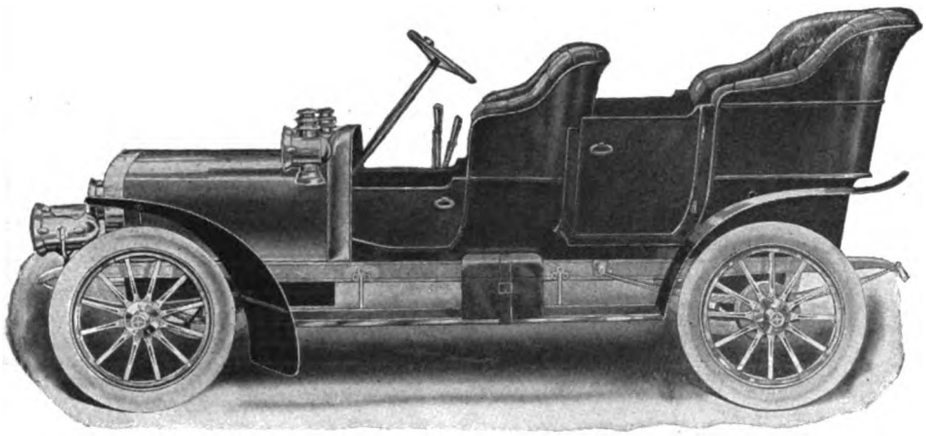
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Aerocar

The Car for today, tomorrow and the years to come. .

—Built by practical men.—



A sensation at the Show in New York last week. Recognized by all as the one reliable air-cooled motor car. Admitted by all as a motor car of exceptional and especial artistic beauty in design and equipment.

Specifications: Aerocar, 1906. Model A. 24 H. P. Frame, pressed steel. Body, Side Entrance Tonneau (front doors easily detached and complete without them). Color, royal blue. Hollow steel dash. Four sight lubricator on dash. Tool box on running board. Five passengers. 45 miles an hour. Wheel base, 104 inches. Wheel tread, 56 inches. Tire dimensions, front and rear, 4x34. Steering, worm and nut. Brakes, two (rear hub) and transmission. Gasoline capacity, 20 gallons. Four cylinders arranged vertically in line. Air-cooled. Ignition, jump spark with storage battery. Drive, shaft, bevel gear. Transmission, sliding gear. Speeds, three forward and reverse. Leather-faced cone clutch. Road clearance, nine inches. Weight, 2,000 pounds. Price, fully equipped, ready for the road, including two large gas headlights, $2,800, f. o. b., Detroit.

Will be exhibited and demonstrated at the Chicago Show.
Some selling territory yet open. If interested write quickly. Illustrated descriptive literature mailed on request. If you inclose 10 cents we will send you a handsome gold-plated scarfpin.

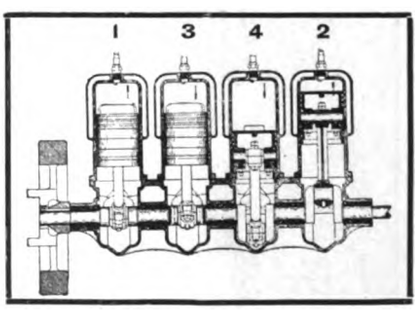
THE AEROCAR COMPANY, Detroit, Mich.

THE TWO-CYCLE ELMORE

FOUR CYLINDERS CONSTANTLY HELPING ONE ANOTHER BEAR THE BURDEN OF EIGHT

With four impulses every revolution, the two-cycle Elmore engine produces a power that can only be equalled in the four-cycle type by the use of eight cylinders. The application of power is always uniform; the force of one explosion impelling the piston half way through the cylinder when another begins.

Note.—Cylinder No. 1 shows the piston half way down. The piston of cylinder No. 2 is at this point starting down from another explosion. Before the force of the explosion on this piston is exhausted the third cylinder will come into action, then the fourth and then No. 1 again, as long as gas is fed into the cylinder and there is a spark to fire it.



The Simplest Engine in the World

Actually fifty per cent. of the moving parts done away with. Up-keep reduced fully fifty per cent. Most successful self-starting engine made.

When you understand that the two-cycle Elmore engine does away with 18 to 20 parts on each cylinder, and absolutely eliminates all inlet and exhaust valves with their attendant mechanism, you'll agree with us that this is the simplest engine in the world. One, two or three cylinders may be cut out at will, both spark and gasoline. With one cylinder cut out the difference is impreceptible, except in speed; with two cut out—barely noticeable. Do you see the economy of this feature?

The fact is, there are so many mechanical advantages about the Two-Cycle Elmore that you should send for our catalogue and special literature, which explains everything fully.

ELMORE MANUFACTURING COMPANY

1104 Amanda Street - - - - CLYDE, OHIO

Members Association of Licensed Automobile Manufacturers.

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The universal praise given **The Goodrich Quick Detachable Tire and Rim** is today the most noteworthy fact in connection with the automobile tire industry.

No other quick detachable construction is so simple in its workings or admits of such quick and easy handling of the tire in detaching and attaching.

No lugs, no clips, no pinching of the inner tube, no possibility of the tire working loose, no bolts, screws or turnbuckles of any sort.

Please write for special booklet.

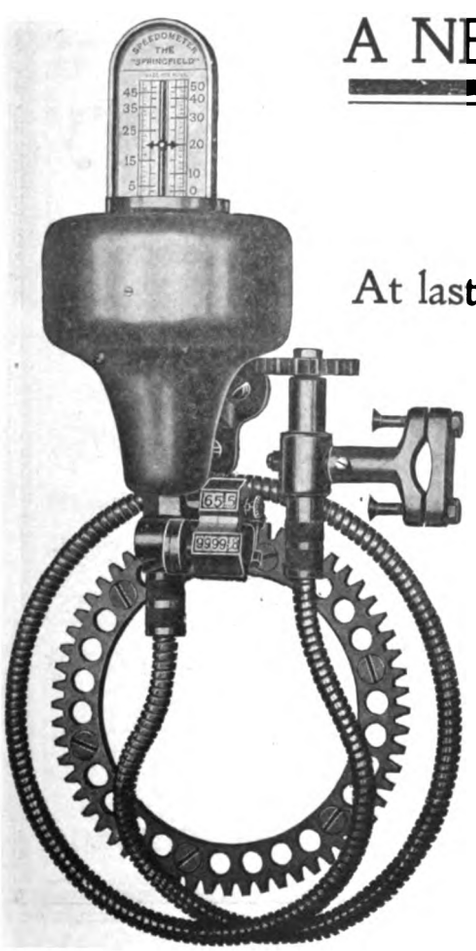
THE B. F. GOODRICH COMPANY,

AKRON, OHIO.

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LONDON, E. C., 7 Snow Hill.

TRADE MARK



A NEW AUTOMOBILE SPEEDOMETER

The "Springfield"

At last a thoroughly reliable Speed Indicator at a moderate price

Aside from its assistance in complying with speed laws and the requirements of public safety, there is no questioning the satisfaction, the real fascination, of knowing the speed at which your touring car is going, and there is no more satisfying way of knowing than by having a "Springfield" combination Speedometer and Odometer on your dashboard.

No instrument at any cost will tell you more or tell it with more accuracy.

Its mechanical construction is the most correct and most direct application of centrifugal force; no cams or other indirect movements. Every motion is balanced and almost frictionless. All internal parts are of steel and hardened where advantageous. All bearings are self-lubricating. It is absolutely water and dust proof.

An exclusive feature of this instrument is the steady movement of the pointer. No jolts can divert it from its true position.

Its accurate indication of speed from 1 mile to the capacity of the dial is guaranteed.

The Dial is made of luminous material, and emits sufficient light to show position of pointer after dark.

Another exclusive feature is the safety device on our Universal pinion attaching Bracket. It will not only adjust up or down, out or in, and pivot both ways so as to fit the steering knuckle of any American built car, but if the pinion should be thrown out of mesh with the gear by the lodging of any foreign substance, it will automatically return to the correct pitch line as soon as the gear clears itself.

For any sized Wheel with Jacketed Flexible Shaft, Correct Length for any make of Car

50 Mile Combination Speedometer and Odometer $45.00
50 Mile Speedometer without Odometer.. 35.00
80 Mile Combination Speedometer and Odometer $55.00
80 Mile Speedometer without Odometer.... 45.00

Patented in U. S. Oct. 10th, 1905. Patented in Canada, England and Europe. Other patents pending.

MANUFACTURED BY

THE R. H. SMITH MFG. CO., Springfield, Mass.

ESTABLISHED 1865 INCORPORATED 1883

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THE
NATIONAL SHOW
February 3=10, 1906

WILL BE HELD AT

CHICAGO

Completely filling 100,000 square feet of space afforded by the

Coliseum and First Regiment Armory

Ninety-seven Exhibitors of Automobiles
One Hundred and Thirty Exhibitors of Accessories

An Open Show. A Complete Show.

One admission fee to both buildings, which will be connected by a covered and completely enclosed passage way. Usual courtesies to dealers, at morning sessions, application for which must be made at the office in First Regiment Armory. Further details of

S. A. MILES, Manager
NEW SOUTHERN HOTEL, CHICAGO

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This AUTO TIRE is both DURABLE and LIVELY

When you buy an *ordinary* Auto Tire, you have to decide a difficult question.

Is it best to get a hard, inflexible tire, which will rack your bones and soon put your car out of business, but which will *last a season or more*

Or—

To get a soft, resilient, easy riding tire, which will go to pieces in a short time because it won't stand the wear and tear of the road?

Momentous question.

And either way you answer it—you lose.

Because if you decide on the *hard* tire, it means breakdowns on the road, and consequent liberal use of a farmer's team. It means constant repairs to your engine, a car always in the shop. Your aching joints are thrown in for good measure.

And if you select the *soft* tire, it means punctures, tire explosions and tire troubles generally. And you have to buy new tires every little while.

It's Money—Money—Money, either way.

You'll envy Rockefeller before you get through.

Now you can *dodge* this momentous question if you will.

Because the Goodyear Detachable Auto Tire has all the GOOD points of both the *hard* and the *soft* tire with the bad features of neither.

Dense, Tough Rubber — Soft, Springy Rubber



It's easy for anyone to understand WHY this is true. Read carefully, and see for yourself.

First, look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it. It's what the *hard* tire is made from.

Now right underneath this is the remainder of the outer tube (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be. It's the same as the seldom-used *soft* tire.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The dense rubber and the soft rubber together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

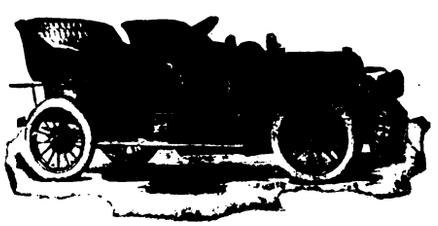
Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Grove St., Akron, Ohio

Branches in the following cities: Boston, 6 Merrimac St.; New York, Cor. 64th St. and Broadway; Chicago, 110 Lake St.; Cincinnati, 262 E. Fifth St.; St. Louis, 712-714 Morgan St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 596 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

BAILEY TREAD furnished on Goodyear Tires (all sizes) when ordered

IF YOU WANT TO KNOW



ASK ANY ROYAL OWNER

If you want to know how a car performs, ask the man who drives one.
If you want to know the details of the Royal Tourist, send for our

NEW 1906 CATALOGUE

Model G, $3500.00, FORTY H. P.

ROYAL

ROYAL MOTOR CAR CO.,

Cleveland, O.

AGENTS: C. A. DUERR & CO., New York, N. Y.; G. J. DUNHAM, Boston, Mass.; THE McDUFFEE AUTOMOBILE CO., Chicago, Ill.; G. W. CAPLIN, Minneapolis, Minn.; AUTOMOBILE & SUPPLY CO., Lim., Toronto, Ont.; MOTOR SHOP, Philadelphia, Pa.; REYBURN MOTOR CAR CO., St. Louis, Mo.; STANDARD AUTOMOBILE CO., Pittsburg, Pa.; AMOS-PIERCE & CO., Syracuse, N. Y.; SCHOEFFEL CO., Rochester, N. Y.; ROYAL MOTOR CAR AGENCY, San Francisco, Cal.;

Member A. L. A. M.

Pennsylvania

Clincher Tires

should be specified on your new car if you want to enter the

$1,000 Tire Economy Competition

You would pay a good premium for an insurance policy against break-downs.

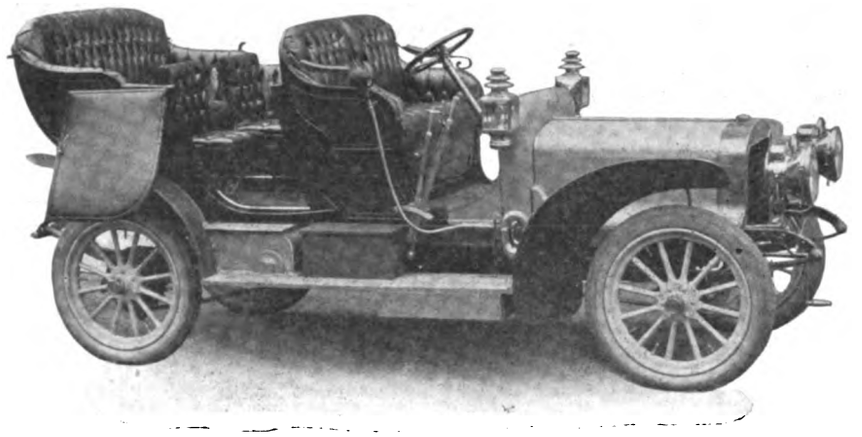
Then buy the best tires that can be made and you will carry your own insurance.

Pennsylvania Rubber Co.

JEANNETTE, PA.

NEW YORK: 1605 Broadway, CHICAGO: 166 Lake Street
PHILADELPHIA: 615 N. Broad Street
BOSTON: 167 Oliver Street

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Acme Motor Car Exhibit

At the Sixth Annual Show of The Automobile Club of America

In the 69th Regiment Armory, Twenty-sixth Street, near Fourth Avenue

"The Old Show in the New Armory"

Demonstrations every day, of the New 1906 Model Acme Motor Cars

ACME MOTOR CARS

are built and designed to the smallest detail entirely and wholly by the Acme Motor Car Co. There are no bought parts for assembling—no unknown quantities.

EVERY ACME MOTOR CAR IS GUARANTEED FOR 365 DAYS

TYPE XV—TOURING CAR. Double Side Entrance Tonneau, seating seven persons. Divided Front Seats. Engine 45 H. P. Vertical, 4 Cylinder, Mechanical Valves. Transmission practically indestructible. Selective Sliding Gear, direct drive on 3rd speed. Speeds up to 60 miles an hour. Complete with Two Side Oil Lights, Two Acetylene Head Lights and Generator, Tail Light and Horn,—$3,500.

TYPE XIV. Of the same practical and thorough construction as Type XV. Greatly improved in arrangement and larger body than last year. Three Speed Sliding Gear Transmission, practically indestructible. Engine 30 H. P., 4 Cylinder, Vertical. Speeds up to 50 miles an hour. Complete —$2,750.

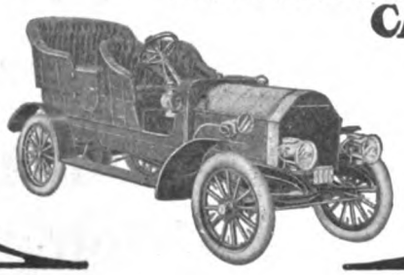
To Try an Acme Is To Buy an Acme

DEMONSTRATIONS AT THE NEW YORK SHOW OR BY APPOINTMENT.

ACME MOTOR CAR CO., Reading, Pa.

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish.
Luxurious in Appointments.
Built by Skilled Workmen from the Best Materials Obtainable.

THE SIMPLEST GASOLENE CAR IN THE WORLD

both as to construction and control and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse-Power $5,000.

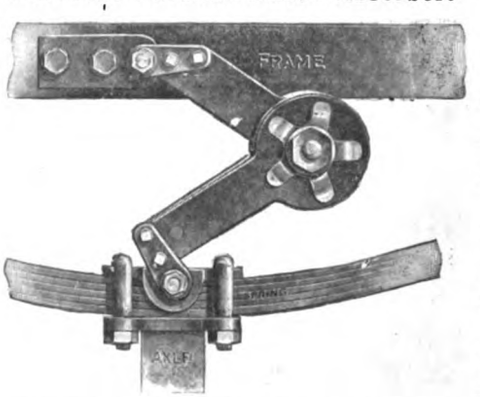
CORWIN MANUFACTURING COMPANY,
Peabody, Mass., U. S. A.

IMPROVED

TRUFFAULT-HARTFORD

SHOCK ABSORBER

Insist that your car be equipped with the improved Truffault-Hartford Shock Absorber.



Increases the speed.

Enables cars to proceed at highest speed over all obstructions.

Doubles the life of tires.

Prevents lost traction.

Absolutely prevents breaking of springs

Makes cobblestones and rough roads seem like asphalt.

New model absolutely self-adjusting. Requires no attention after application.

Adopted by the Pierce Great Arrow, Locomobile, Matheson, Richard-Brasier, Peugeot, Napier, Gobron-Brillie.

Don't be misled by devices made on principles which we have discarded.

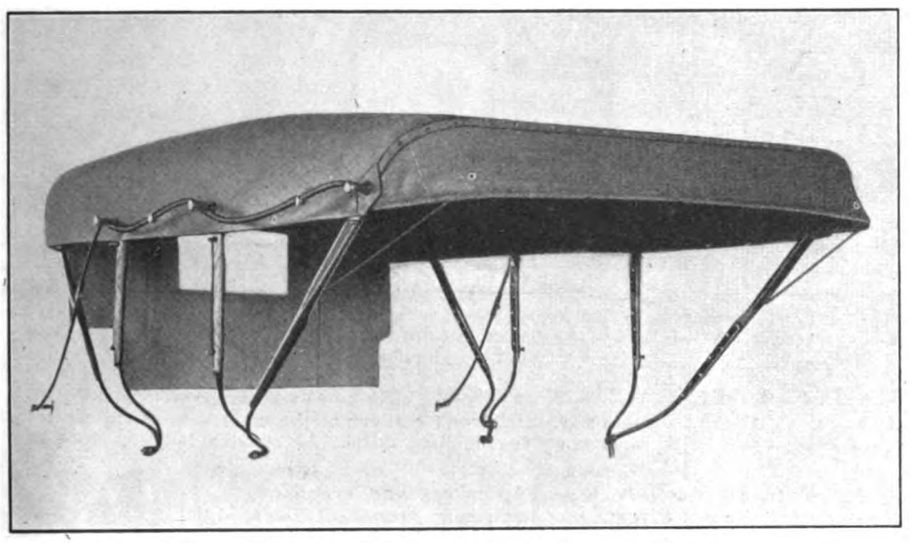
Cars under 1500 lbs. $40 (four suspensions).
Cars over 1500 lbs. $60 (four suspensions).

HARTFORD SUSPENSION COMPANY
E. V. Hartford, Pres. **67 Vestry Street New York.**

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GOBRON-BRILLIE,
"THE FINEST AUTOMOBILE IN THE WORLD."

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Col. Sprague's Exhibits at the Shows.



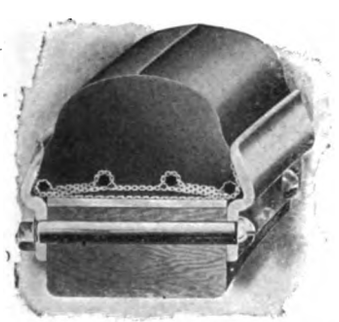
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The Sprague Auto Tops.

The Sprague Idea,
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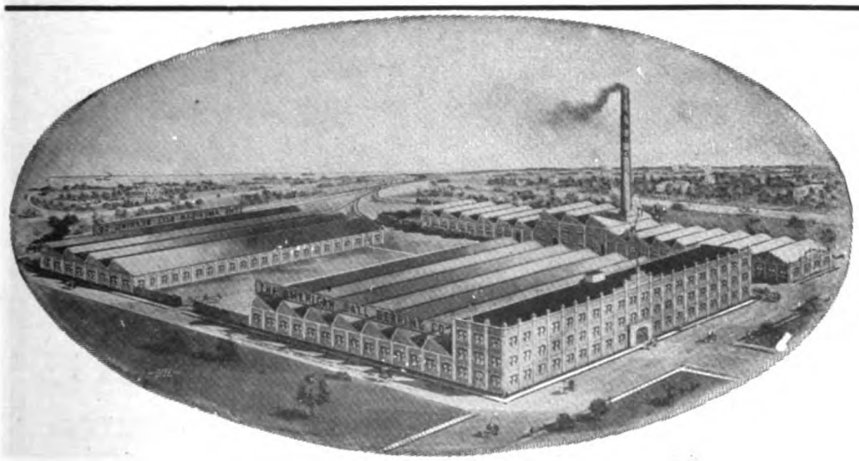
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was used on the

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continuously for the seasons of 1903, 1904, 1905, 1906.

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Made entirely of

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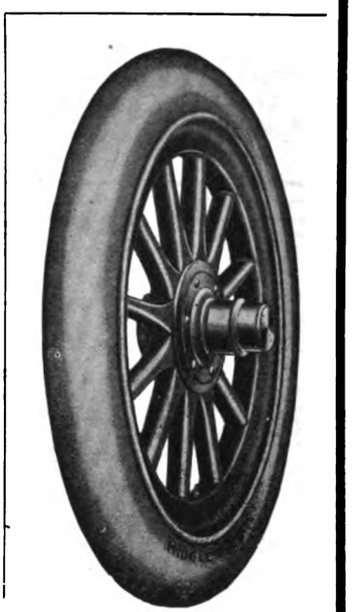
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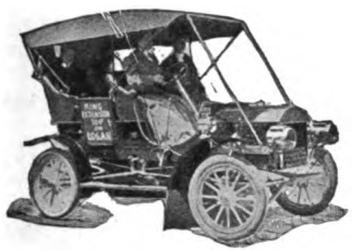
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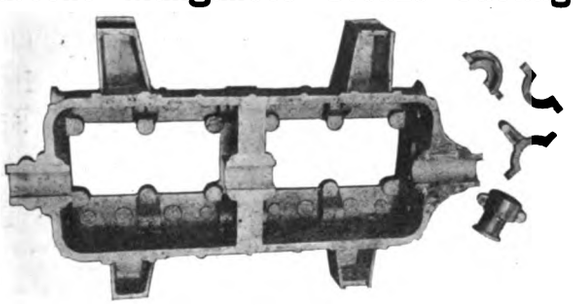


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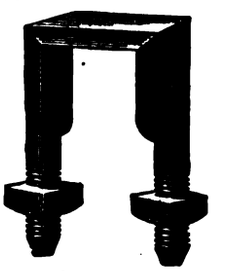
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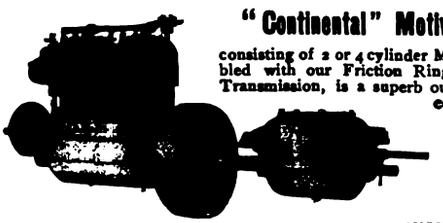
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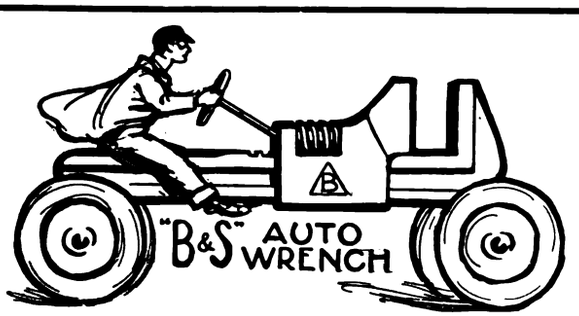
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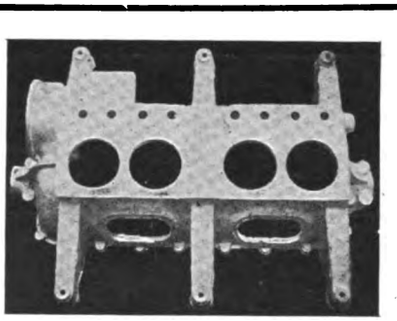
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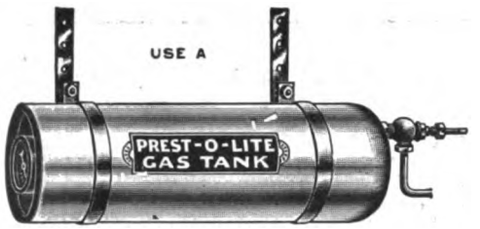
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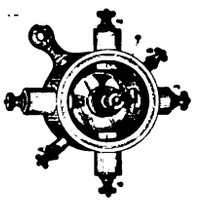
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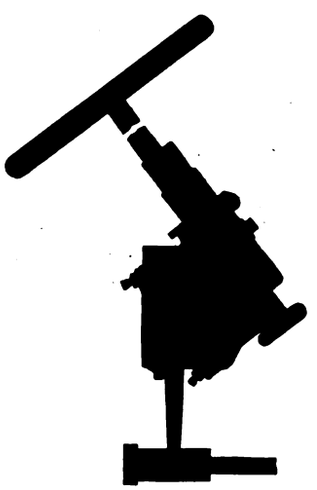
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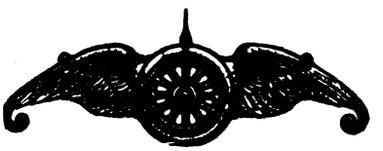
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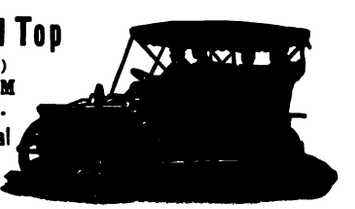
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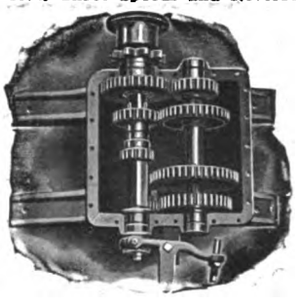
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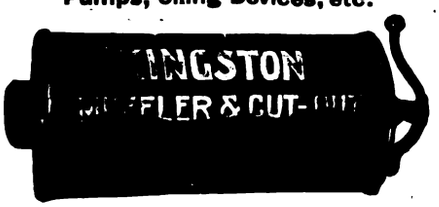
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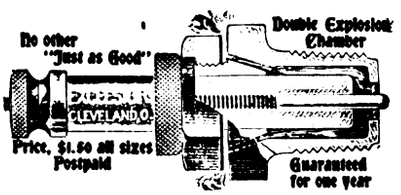


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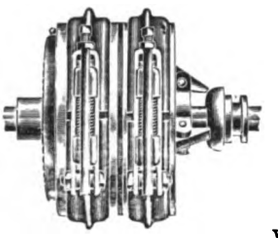
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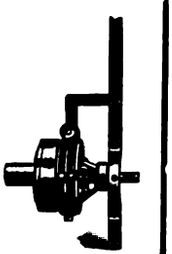
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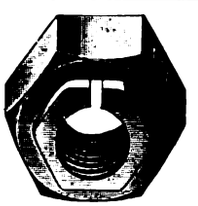
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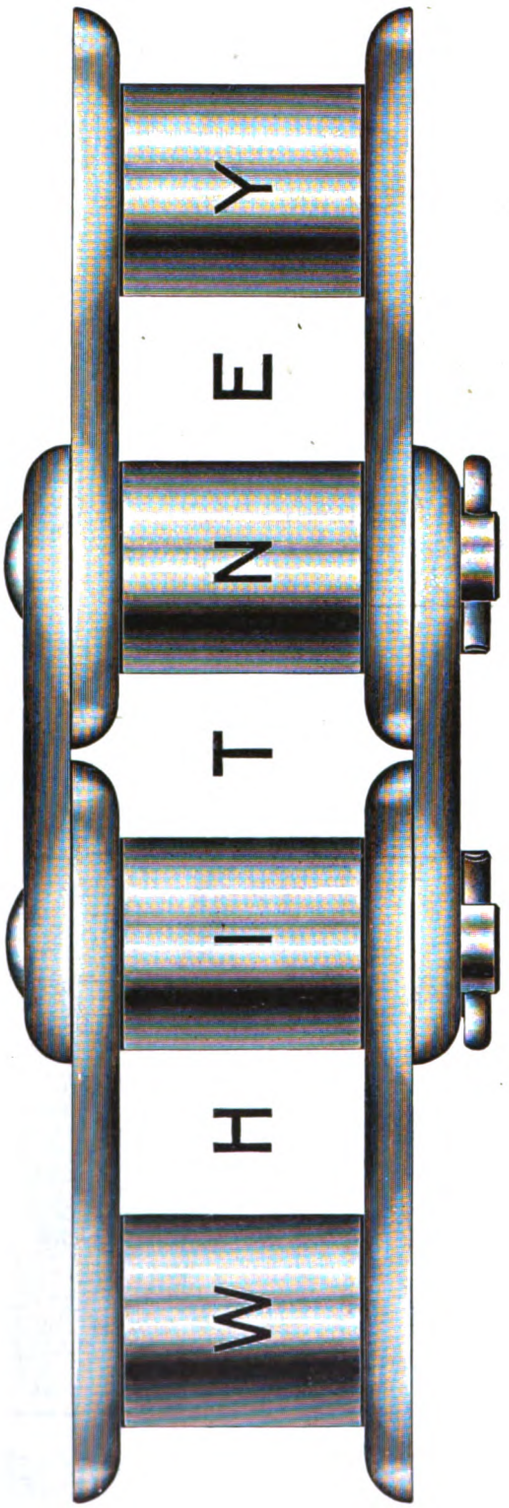
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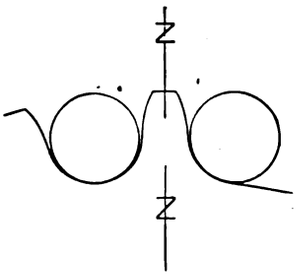
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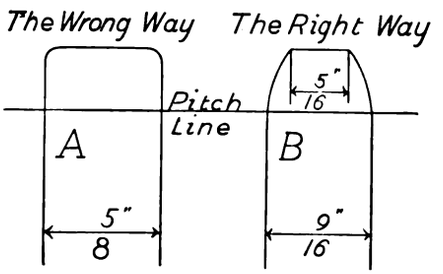
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At the Automobile Shows notice the great number of cars equipped with "Whitney" Chains.

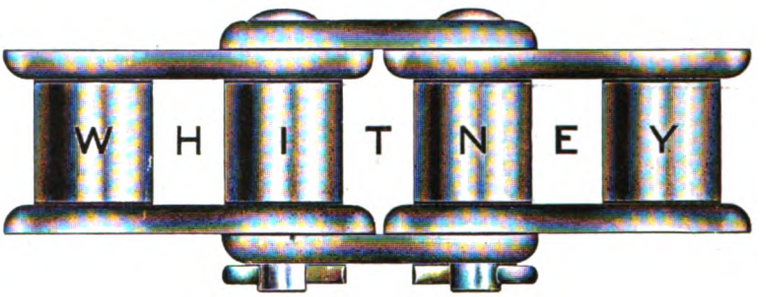


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SECTION OF SPROCKET TEETH THROUGH LINE Z-Z.
B—Shows Correct Section for "WHITNEY" Chain No. 7.



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Thousands of Chains have been damaged by interferences and unfavorable conditions.

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The Motor World

Volume XI
No. 2

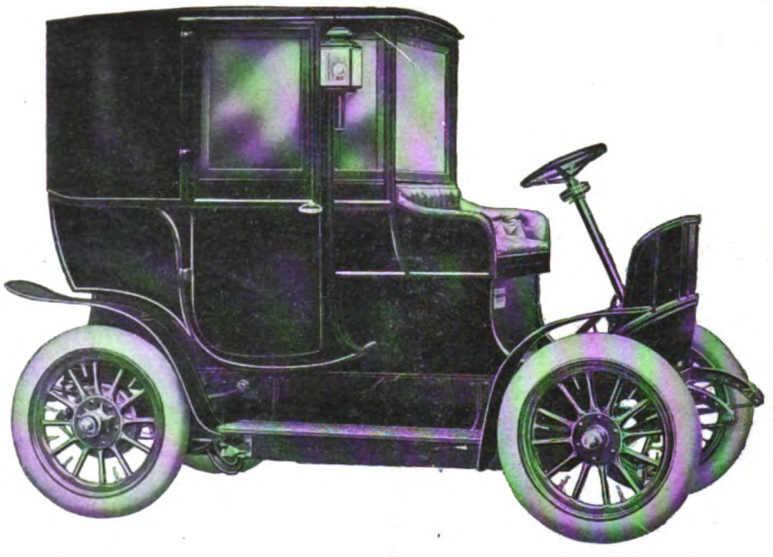
New York, N. Y., U. S. A., October 5, 1905.

10 Cents a Copy
$2.00 a Year

Columbia

ELECTRIC
Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other Improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75.

ELECTRIC VEHICLE COMPANY, Hartford, Conn.

NEW YORK BRANCH: 134, 136, 138 West 39th St.
CHICAGO BRANCH: 1413 Michigan Ave.
BOSTON: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.
PHILADELPHIA: Pennsylvania Electric Vehicle Co., 250 North Broad St.
WASHINGTON: Washington E. V. Transportation Co., 15th St. & Ohio Ave.
PARIS: A. Bianchi, 194 Boulevard Malesherbes.

Member Association of Licensed Automobile Manufacturers.

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The Hartford Perfected Dunlop Tire.

Paris, July 28, '05.

Dear Sirs:-

Postal No. 3.

We have arrived in Paris coming over the Route Nationale from Aix les Bains via Lyons and Nevers. The roads were exceedingly trying, very hard and a lot of "pave" or cobblestones. I had two punctures. These were the only mishaps in 2136 miles and the tires have stood the hard work without showing any other signs of wear and tear. People here consider this a very good record as many of the best foreign tires blow out from the heat.

Yours truly,

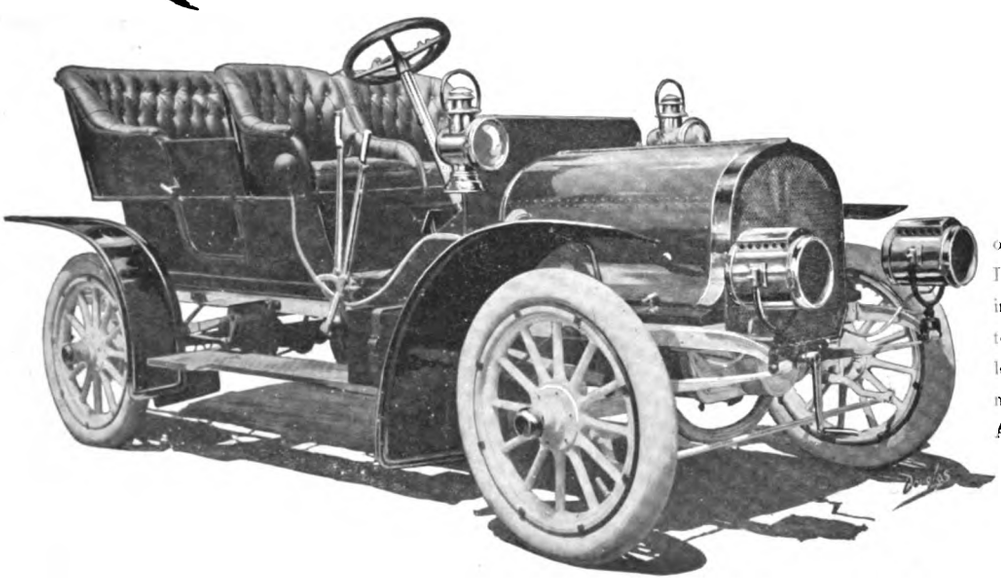
Walter Hale

Watch for others to follow.

Made by THE HARTFORD RUBBER WORKS COMPANY, Hartford, Connecticut.

CORBIN CARS

A stock 16 H.P. Model D made 2321.6 miles in the six day, non-stop contest at Long Branch, N. J. Duplicates of this car can be delivered promptly.



The performance of the Corbin 16 H. P. Air cooled motor in the non-stop contest has forever silenced the opponents of **practical Air Cooling.**

THE CORBIN MOTOR VEHICLE CORPORATION, New Britain, Conn.

NEW YORK, 4 West 38th St. BOSTON 163 Columbus Ave. PHILADELPHIA 529 No Broad St.

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What You Get For Your Money

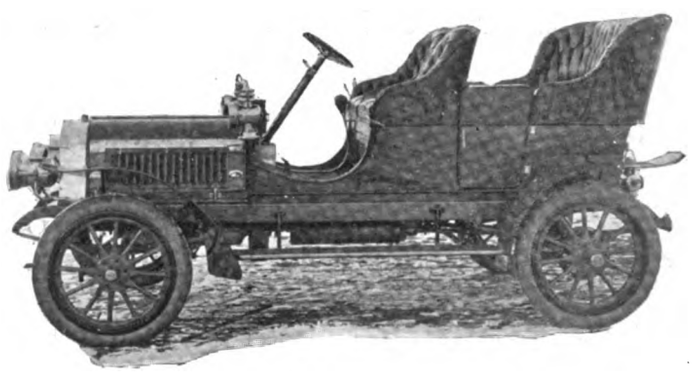
is more important than the price you pay.

That is one reason why our cars are so often referred to as

"Those Remarkable Mitchells"



MITCHELL LIGHT CAR, $750.



MITCHELL TOURING CAR, $1500.

They set up a new standard in price values.

At $750 and $1500 there is nothing that even begins to approach them.

Have you ever taken the trouble to "look into" the matter?

MITCHELL MOTOR CAR COMPANY,

RACINE, WIS.

Member American Motor Car Manufacturers Association, Chicago.

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PUBLIC NOTICE

of just what may be expected of

1906

Diamond

WRAPPED TREAD TIRES

Was given by the Vanderbilt Cup Trials.

Eight cars were equipped with Diamond Tires, and not a finger was touched to any Diamond Tire throughout the Race.

B. H. Dingley, driver of the Pope-Toledo, first to finish, said:
"They are the best tires in the world. I cannot say enough of the satisfaction I have had from them."

Joseph Tracy, who drove the Locomobile finishing second, said:
"My Diamond Tires gave me absolutely no trouble."

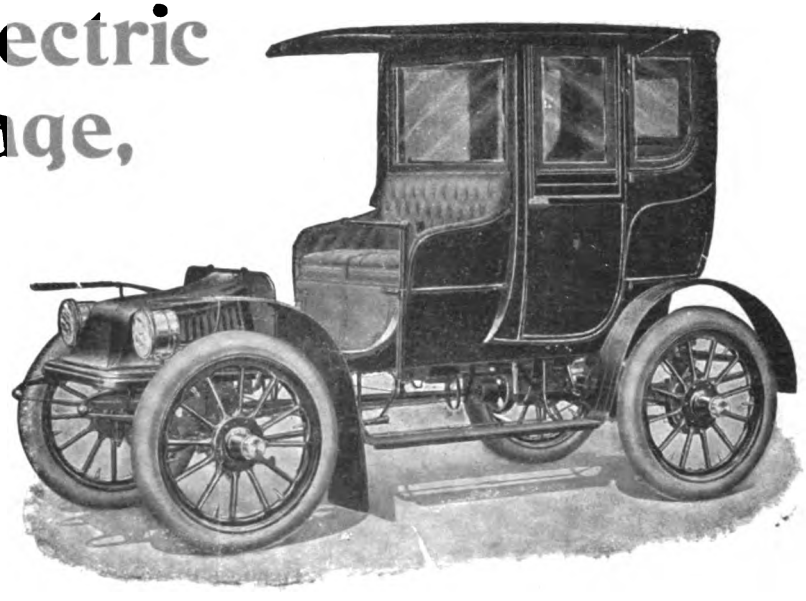
Robert Jardine, driver of the Royal, third in the trials, said:
"I cannot ask for better tires under any conditions."

Frank Nutt, the Haynes-Apperson driver, taking fourth place, said:
"From start to finish I had no occasion to give my tires a thought. Their record was perfect."

THE DIAMOND RUBBER CO., = Akron, Ohio.

The BAKER ELECTRIC

The Baker Electric Depot Carriage,



The Most Elegant of all Electrics.

ALSO

RUNABOUTS, STANHOPES,
SURREYS, ETC., ETC.

WE ARE READY TO TALK BUSINESS.

THE BAKER MOTOR VEHICLE COMPANY, CLEVELAND, OHIO.

C. B. RICE, Broadway and 58th Street, New York Agents.

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The Motor World

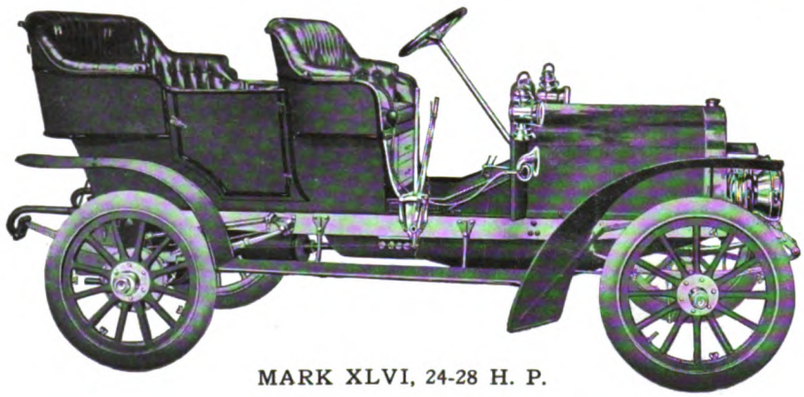
Volume XI
No. 18

New York, N. Y., U. S. A., January 25, 1906.

10 Cents a Copy
$2.00 a Year

Columbia

construction for 1906 far surpasses the best work previously put into any motor cars, American or European. We tell all about it in our special illustrated booklets, "Columbia Chrome Nickel Steel," "Fashioning a Crank Shaft," "Transmission, Etc.," and "Consistent Differences." Each of these booklets will be found intensely interesting by all who follow the latest advances in automobile building. Mailed on application.



MARK XLVI, 24-28 H. P.

MARK XLIV-2	18 h. p.; two opposed cylinders; shaft drive; double side entrance body seating five persons. Price	$1,750
MARK XLVI	24-28 h. p.; four vertical cylinders; shaft drive; seats five. Price, Standard,	$3,000
	" Limousine,	$4,000
MARK XLVII	40-45 h. p.; four vertical cylinders; double chain drive; seats five, with extra drop seats for two. Price, Standard	$4,500
	With Victoria, Limousine or Landaulet Body	$5,000 to $5,500

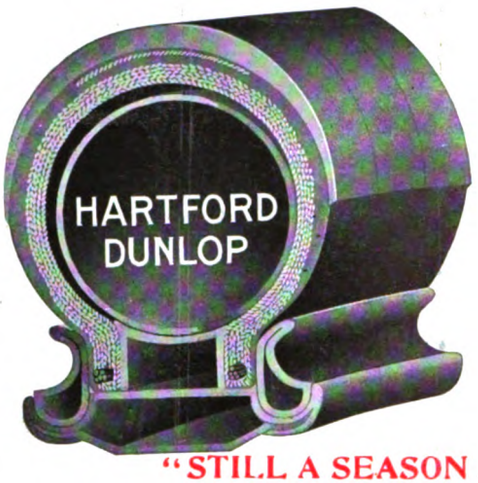
Separate catalogues of Columbia Gasoline Cars, Columbia Electric Carriages and Columbia Electric Commercial Vehicles will be sent on request.

ELECTRIC VEHICLE COMPANY, Hartford, Conn.

NEW YORK BRANCH: 134-136-138 West 39th St.
CHICAGO BRANCH: 1332-1334 Michigan Ave.
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PARIS: A. Bianchi, 29 Ave. de la Grande Armee.

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TIMES CHANGE.

AT THE 1905 SHOWS competitors belittled and decried

Our Dunlop Detachable Rim

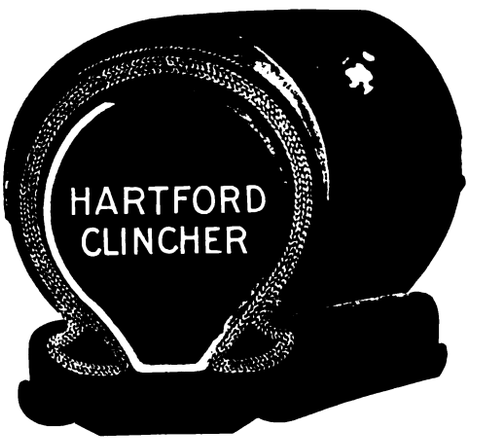
Notwithstanding it **SWEPT THE COUNTRY.**

This year they imitate, but **OUR IMPROVED RIM** which takes all makes of clincher as well as Hartford Dunlop and Hartford Clincher Tires is

"STILL A SEASON AHEAD" like our

"One Cure Wrapped Tread"

HARTFORD DUNLOP CLINCHER AUTO TIRES.

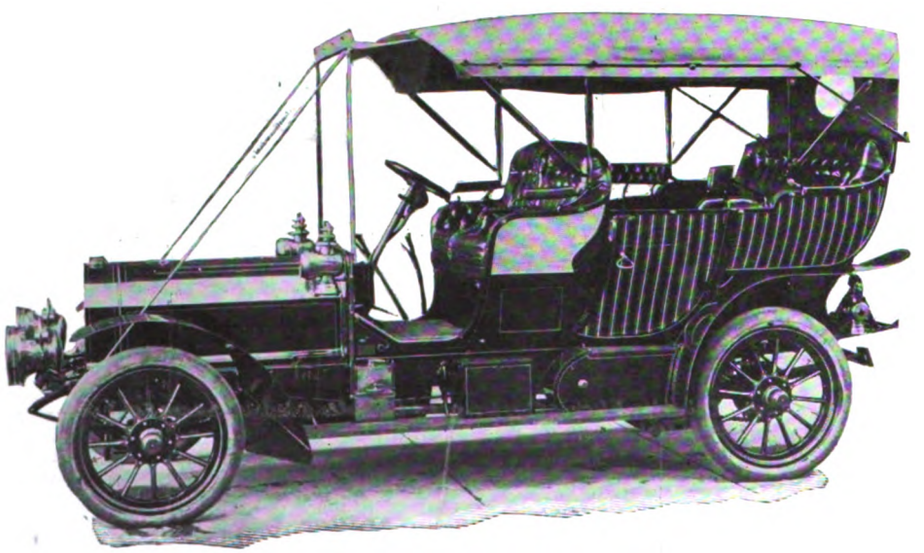


If Imitation is Real Flattery, we certainly feel its Sincerity.

THE HARTFORD RUBBER WORKS COMPANY,

HARTFORD, CONN., U. S. A.

APPERSON



50-55 H.P. 1906 MODEL, SPECIAL BODY TO ORDER.

We only build a few good cars for those who want the best.

We sell these high-priced cars only through our branch houses and our home office.

40 to 95 H. P. in any style of body.

BRANCH HOUSES:
New York, 66 West 43d St.
Boston, 43 Columbus Ave.
Philadelphia, 326 N. Broad St.
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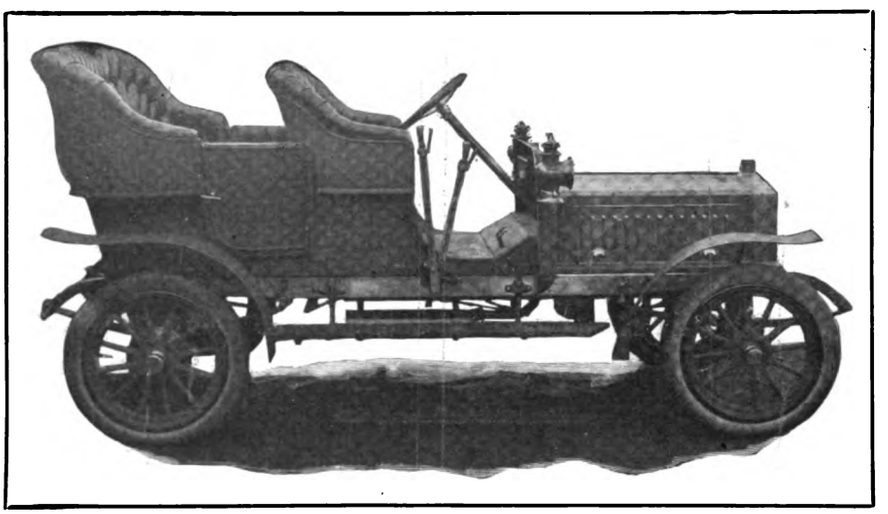
APPERSON BROS. AUTOMOBILE CO., - Kokomo, Indiana.

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MITCHELL

MODEL D—4



FOUR CYLINDERS, 24-30 H. P.

$1800

EMBODIES EVERY APPROVED MODERN FEATURE

"You can't pay more and get your money's worth.
You can't pay less and get full satisfaction."

Send 10c. for a Copy of our 1906 Art Catalogue
IT'S A BEAUTY.

MITCHELL MOTOR CAR COMPANY

RACINE, WIS.

Members American Motor Car Manufacturers' Association, Chicago.

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WHY
the Strong Lead of
Diamond
1906
Wrapped Tread Tires.



45 sets of Diamond Wrapped Tread Tires on cars exhibited at Madison Square Graden; nearest competitor 35 sets.
85 sets of Diamond Wrapped Tread Tires on cars at the Garden and Armory Shows combined; nearest competitor 73 sets.
Solid Tires—Diamond Total for both Shows, 28 sets; nearest competitor 15 sets.
Grand total of Diamond Tires, 113 Sets. Next highest grand total, 73 sets.

The Ultimate Test is Service.

Show figures are worth nothing if the tires have no other recommendation.

THE DIAMOND RUBBER CO., - - Akron, Ohio

THE BAKER ELECTRIC STANHOPE



is, of all motor vehicles, the one most desirable from every standpoint for family and professional use.

For family use it is especially adapted by its extreme simplicity and ease of operation. Any man, woman or child can drive it after a few hours' practice. There is no troublesome cranking of a heavy motor, made doubly difficult in cold weather. No loading with gasoline, oil and water, no trouble with spark plugs, and on account of their light weight, the dangers of tire troubles, skidding, etc., is reduced to the minimum.

THE BAKER STANHOPE is always ready for use at a moment's notice. The user merely turns on an electric switch, operates the control lever and away he goes with as great speed as may be legally used.

BAKER STANHOPES being noiseless, free from grease and odor, and always immaculately clean, are ideal vehicles for the use of ladies when shopping, calling, or driving for pleasure, and they are so simple to operate that a chauffeur is an incumbrance. In addition, these

Aristocrats of Motordom

are so superbly finished in every minute detail as to make them eminently distinguished in appearance, their elegant refinement instantly appealing to the most casual observer.

These excellent features have enabled us to sell every machine we have made early in the season, and obliged us to refuse orders.

Our line of vehicles comprises Imperials, Stanhopes, Surreys, Station Wagons and Broughams (inside and outside driven), all superb vehicles, elegant and refined in every detail and with that high degree of mechanical excellence which has placed and keeps them in the front rank of the automobile procession.

We desire agents in a few important cities not yet covered.

THE BAKER MOTOR VEHICLE CO., - 22 Jessie St., Cleveland, O.

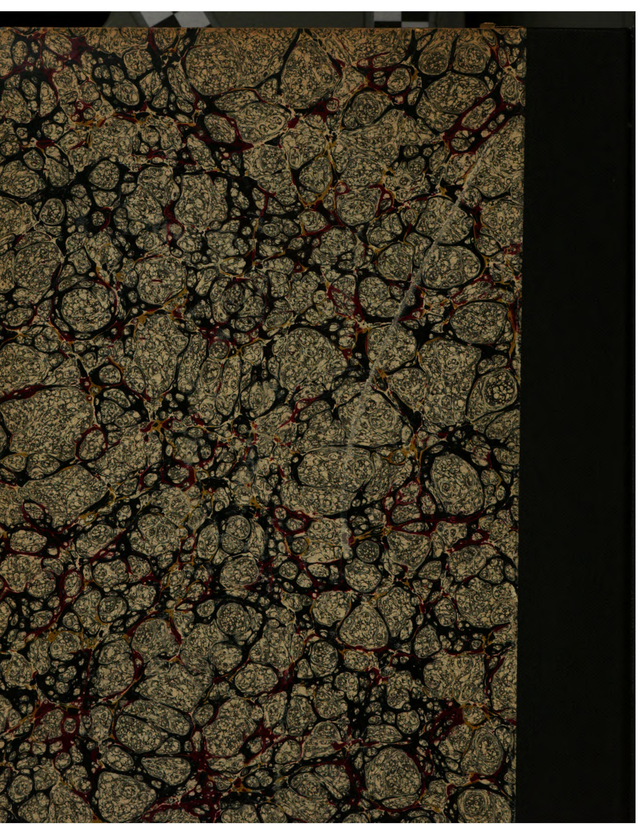
New York Representative, C. B. RICE, 1790 Broadway, Cor. 58th Street.

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